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To the Gas Engineer and New Business Manager

Are you fully realizing your present responsibilities to the Administration and the valuable foundations you can at the same time lay for your Company's future security and progress?

TO WIN THE WAR

Three essential necessities must be economized. They are

FUEL, STEEL and LABOR

FUEL—The existing shortage is 29,000,000 barrels, and the additional requirements for next year for the Emergency Fleet and new war industries are 100,000,000 barrels. The coal shortage is approximately 50,000,000 tons.

What methods are you using to relieve this situation by recommending the use of gas efficiently, and using the surplus created for essential work, displacing oil and coal, and thereby establishing your company strongly for after-war competition?

STEEL—The Needham High-Pressure Gas System is a one-pipe system, and therefore in new installations does not require an air line, and uses a smaller gas service line on account of the pressure, as against any other system. Save Steel 75% by weight of pipe installed, as well as less cost of labor.

LABOR—The Army requirements and new war industries are causing a further dilution of labor. It necessitates using unskilled and female labor for previous skilled labor, and this applies to many occupations where heat treatment is necessary. Women are doing soldering work on aeroplane parts and gas mask canisters, etc., and are attending to heating machines, etc. Why give this labor obsolete methods of adjusting two valves giving imperfect combustion when one valve and perfect combustion is available?

PRODUCTION—Speed of production is assured, and is increased as against air blast or other methods, as is proven by its adoption by the United States Government, American Can Company, General Electric Company, and many other recognized leaders of industry.

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The Needham Gas Appliance Co., Inc.

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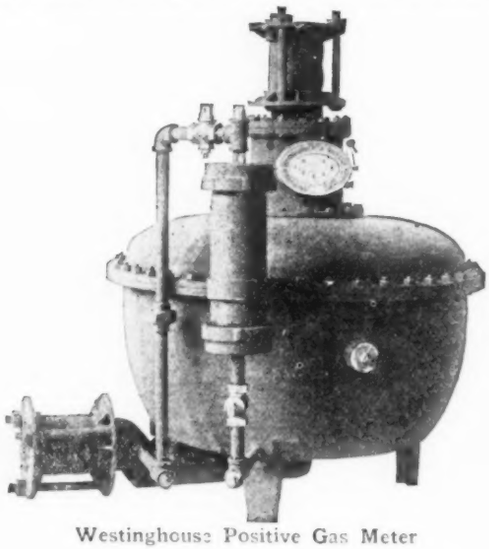

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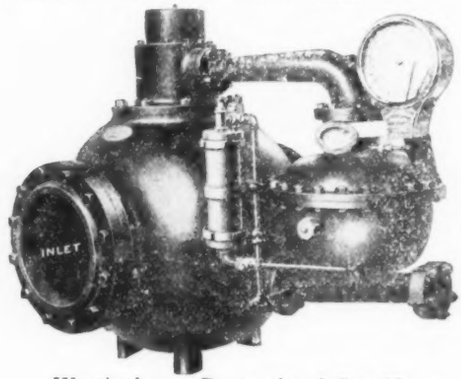

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Terre Haute Installs Booster System to Give Adequate Service in Northern Section of Its Territory

Results Excellent — Reduction in Percentage of Lost Gas — Weighting Down Holder With Concrete Blocks — The Ford Car As a Weight Raiser

By A. C. HOWARD

Gas Engineer, United Gas & Electric Engineering Corporation, Sixty-One Broadway, New York City

The capacity of the distributing system of the Citizens Gas & Fuel Company, of Terre Haute, has been greatly increased during the past three years by the installation of a medium pressure booster system.

The purpose of this article is to show, first, the great increase in capacity that will be effected by a comparatively small addition of booster pipe, and, second, that by suitably planning this booster system extensions can be added to the original installation from time to time, each of which will eventually form a link of a complete and originally planned system.

In 1915 this company sent out 337,000,000 ft. of gas per year, and the maximum daily sendout was 1,200,000 ft. All of the gas mains at that time were under low pressure, the only point of admission to the mains being at the works holder. It was necessary to carry 8-in. pressure at this point, and at the time of the first booster installation the pressure was very low in the northern part of the city. Since that date a booster system has been installed and an addition has been made to it. The annual sendout is now 520,000,000 and the maximum daily sendout 1,800,000. Gas is admitted to the low-pressure mains through four generators at four different points. The maximum pressure carried in the low-pressure mains is 6 in. and the service is excellent everywhere. Furthermore, by adding to our present booster system when necessary the present capacity of the distribution system can be increased, one might almost say, indefinitely.

Inadequate Mains

Three years ago, due to the rapid growth of business, the gas pressures in the northern part of the city of Terre Haute began to fall off and the gas service in that part of the city was very much impaired. At that time all of the gas supplied to the city was taken directly into the low-pressure mains from a 600,000 cu. ft. commercial holder at the plant. The gas was fed into the mains at holder pressure as the company had no governor. This holder has three lifts. The pressures thrown by them at that time were 8, 6 and 4-in., respectively. The gas works is southwest of the center of the city on the Wabash River, which forms the western boundary of the city. At that time it was necessary to keep the third lift of the holder cupped at all times in order to maintain sufficient pressure to give even fair service in the northern part of the city. For this reason only one-third of the contents of this holder were available for distribution.

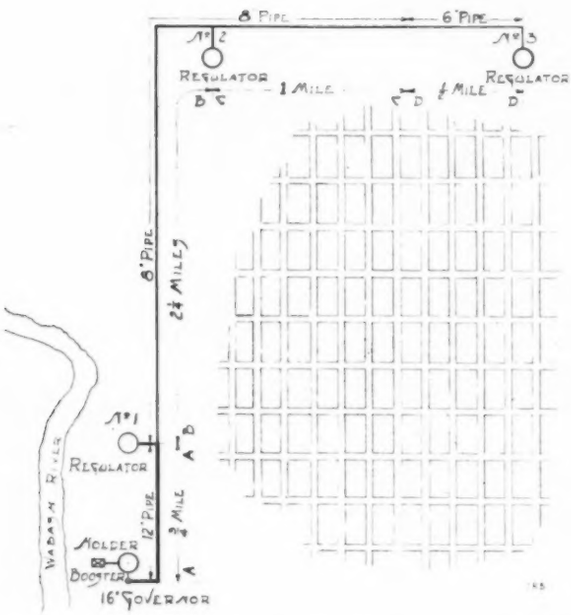
Prospective Business

The company also had some large prospective industrial consumers in the northern end of the city as well as a recently built up residential district asking for gas. Unless arrangements were made for increasing the capacity of the mains feeding the north end, it was out of the question even to consider the annexation of this new business.

Permanent Extensions

In laying out our extension to remedy existing conditions, we decided to install a booster line towards the north end of the city. Our plans were so drawn up that the booster pipe line included in this immediate extension should later form a part of a future medium pressure belt line through the outskirts of the city. This proposed belt line is to be gradually built by adding piece by piece, as the company's requirements demand. Since the original installation one addition to the booster system has been made.

An inspection of the holder satisfied us that the holder could be weighted sufficiently to add 1½ in. to the pressure, thus permitting the use of one more lift for distributing purposes. Before weighting the holder it



was necessary to install a governor, as otherwise the pressure would be too great with the third lift cupped.

Installation of Station Governor

A 16-in. Reynolds governor operated by a diaphragm was selected. This governor was installed in an unusual manner. A 16-in. A. P. Smith sleeve and valve was cut into the 16-in. holder outlet and connected with the 16-in. pipe into the governor inlet. The outlet of the governor was connected with 16-in. pipe into a 16-in. tee on the main feeder to the city. The 16-in. governor by-pass and by-pass valve were located in the governor house.

Tap Made Under Pressure

This A. P. Smith sleeve and valve consists of a split tee sleeve and a special valve. The split tee sleeve is bolted together around the pipe and leaded. Into the bell at the side of the tee sleeve is inserted the spigot end of the special valve which has a half-lock into this bell. This joint is then leaded and calked. The tapping machine is next bolted to the hub flange of the valve, the valve is opened and the hole cut. The tapping machine is then screwed out, the valve closed and the tapping machine removed. This completes the work and leaves a bell-end valve to tie into.

Weighting Holder

The holder was weighted immediately after the installation of the governor. It was found the cheapest and most convenient method of weighting was by the employment of especially constructed concrete blocks. Each of these was made with an eye-bolt to facilitate lifting. They were made of a convenient size for handling, and so shaped that they could be placed around the outer edge of the crown without seriously interfering with the removal of snow. The bottom of each block was given a coating of pitch and the surface of the crown on which each block rested was coated thickly with pitch, so that there was no danger of moisture collecting under the blocks. The blocks were hoisted by a block and falls, a Ford car furnishing the power. The car was attached to the end of the line, and by running forward across the yard hoisted a block. It was then backed up in a position for raising the next block without being detached from the hoisting line.

Regulation of Governor

The governor was set for 7½ in. before the weights were placed, and after they were in position we were able to maintain the required pressure with the third lift of the holder uncupped, thus making two-thirds of the holder contents available for distribution.

Booster Main

Our intention was to lay a booster main towards the northerly end of the city which would supply sufficient gas to the north end when pumping into the end of the booster line at the works at a pressure of about 4 lb. The northern end of this line was to be equipped with a regulator in order to reduce the pressure of the gas admitted to the low-pressure system at this point.

Previously Laid Low-Pressure Mains Form Part of the Booster Line

As our object was to render efficient service with a minimum addition of pipe, we used three-quarters of a mile of 12-in. low-pressure pipe as part of the booster line. This feeder ran from the plant in a general northerly direction and terminated at our meter repair shop, shown on the accompanying sketch. The 12-in. main is marked AA on the sketch. This 12-in. main supplied seventy services, but fortunately was not connected to any other low-pressure mains except at the plant, where it received gas, and at its extremity at the meter shop. Our first step was to separate the plant end of this pipe from the low-pressure system and connect it to the booster discharge. The end at the meter shop was next cut out of the low-pressure system. The services were then all equipped with house regulators. As the portion of the low-pressure system near the meter shop was deprived of the supply of gas previously delivered by this main, the loss was compensated for by the installation of a 10-in. regulator at this point. It was convenient to place this regulator in the meter shop. This regulator is No. 1 on sketch.

Completion of Booster Line

At the extremity of the 12-in. line at the meter shop this line was reduced to 8 in., and 2¼ miles of 8-in. pipe, marked BB, was laid to regulator No. 2, which is 3 miles from the works and installed in a pit. This is a duplex Reynolds regulator. This line is made up of Universal pipe, this style of pipe having been employed exclusively in Terre Haute for eleven years or more with satisfaction.

Booster Plant

The booster plant originally installed consists of a Roots positve machine having a capacity of about 40,000 per hour with a net increase of pressure of about 4 lb. The intention was at a later date to buy a second-hand booster of larger size instead of installing a reserve

machine at that time. This machine is driven by a vertical engine, and is equipped with speed and pressure governors.

Operation of Booster System

The pipe, regulators and booster above make up that portion of our booster system which was first installed. After regulators Nos. 1 and 2 were adjusted excellent service could be rendered with the holder governor set at 6 in., thus making the entire holder of gas available for distribution. The southern end of the city, near the plant, had always received gas under adequate pressure, and the service in the east end also was excellent, although the booster reinforced only the north side feeding from the western extremity. The pressure regulator on the booster was set to supply gas at the pressure required by the regulators and no more, so as not to waste steam, and was readjusted occasionally to suit the output. The booster was operated during periods of peak sendout only, and when it was shut down the by-pass around it was opened so that the booster line worked under holder pressure. During hours of little or no sendout the booster line can be shut tight and the holder governor pressure further reduced, feeding back through governors into the booster line at holder pressure to supply services attached to that line. Peak hours cover a long period, as there are many industrial consumers in the north end.

Unaccounted-for Gas

The booster line has rendered the service excellently, and the unaccounted-for gas is now less than 7 per cent, whereas in 1915 it was nearly 12 per cent, when 8-in. pressure was carried in the low-pressure mains.

More Industrial Business

The industrial business of the company, mostly in the north end, grew much more rapidly than was expected, but has been easily taken care of as previously planned.

1917 Addition to Booster System

A large part of this later business was in the central part of the northern section, and our 8-in. duplex regulator, as stated before, feeds into the low-pressure system on the western side of the section. We therefore added 1 mile of 8-in. pipe running in an easterly direction to our medium-pressure line. This pipe, marked CC, is part of the belt line. A large industrial consumer was located about ½ mile from the end of this 8-in line, so that a 6-in. pipe, DD, was laid to his shops and a 6-in. duplex regulator discharging into the low-pressure system placed in one of his buildings. This gives this factory the advantage of high-pressure gas. We can later tie into the end of the 8-in. line and extend further north. This factory may use 115,000,000 per year.

Second Booster

At this time it was also necessary to add a new booster. The new machine, which has now been in operation about eight months, is a Root's blower having a capacity of 100,000 per hour with a net pressure of 6 lb. It is driven by a horizontal engine connected by a flexible coupling. Later, when it is necessary to extend a medium-pressure line into the south end, we will have some reserve capacity.

In order to properly appreciate the advantages of a medium pressure line feeding into the low-pressure system, we have only to look at the small mains used for distributing natural gas in many cities. To consider the advantage of admitting gas into a main at several points from a theoretical standpoint, let us take for example 10 miles of pipe of any diameter. Suppose that gas is admitted to one end of this pipe at 6-in. pressure, and that the pipe will deliver to the other end 10,000 ft. of gas per hour at 4 in. Now suppose we admit gas at 6-in. pressure at both ends of this pipe, then from each end 15,000 ft. per hour will be delivered at 4-in. pressure to the middle. In other words, the capacity of the pipe is increased three times. This example assists us to appreciate how vastly a low-pressure distributing system can be increased in capacity by the admission of gas at several more or less evenly distributed points. Furthermore, the belt line furnishing the gas to these points comprises but a very small percentage of the entire distributing system. The cost of pumping is very little, and as the pressure line is tightlly constructed and permits lower pressures in the low-pressure mains, the net result should be a reduction in leakage.

Fuel Oil the Means by Which American-Manned Ships Can Compete in After-War Commerce

Need of Oil Conservation Not a Matter Solely of War's Length, But Important to Nation's Economic Welfare Thereafter

No one can measure with any degree of accuracy the quantity of oil under ground, and no oil company can ever hope to secure in storage above ground more than a few months' supply of crude oil or any petroleum product, declared David M. Folsom at the fuel conservation meeting of the San Francisco Section of the American Society of Mechanical Engineers. A change in the demand for refined products or a change in the production of crude oil is immediately reflected in the entire industry. Any attempt to predict the future is therefore rash; but in spite of this, I wish to try to point out in a broad way the future requirements of oil on the Pacific and particularly to emphasize the dependency of Pacific industry and commerce upon oil.

After-the-War Commerce

If the United States is to meet successfully the industrial and political problems which will arise after the war, it must be done through increased domestic development and through the expansion of our foreign commerce.

To the expansion of commerce we are already committed through the construction of the merchant fleet under the United States Shipping Board. In 1914 the total merchant fleet of the world was, in round numbers, 50,000,000 tons. A part of this has been destroyed by submarines and raiders, but by 1921 there will be under the American flag and under the direction of a single organization 25,000,000 tons of new ships. These ships must have some place to go and they must have

something to carry. A great part of this fleet will undoubtedly operate on the Pacific, and every port and every industrial section of the Pacific must feel the impulse and the stimulus of increased trade.

Oil for Ships

If this is to be done I believe that every boat that operates successfully on the Pacific under the American flag must be an oil burner, and that eventually these boats will be equipped with internal combustion Diesel engines. There are two reasons for this. In the first place, the coaling stations of the world are under the control of either the English or Japanese nations, and more important than this is the fact that only through the use of oil can America meet the cost of competition under the handicap of the high wages which this country pays its seamen.

Oil is a natural fuel for ships; compared with coal, cheaper and easier to handle, and more efficient to use. It gives a longer steaming radius to vessels. The amount of oil required to supply our new boats will tax our resources to the utmost. At present we are not producing in this country enough oil to meet our own domestic requirements, and the present estimates of the Shipping Board call for an additional 80,000,000 bbl., or 25 per cent of the present production for the support of the new merchant fleet.

This can only mean one thing—a smaller quantity of oil on land. It is inconceivable to us as Americans that our fleet will not be a success, and that we be unable to compete successfully in the commerce of the world, but we can only provide oil for this fleet by conservation and substituting other fuel or power on land for the fuel oil we are now consuming.

Conservation Not Necessarily Curtailment

On the Pacific Coast this presents an acute problem worthy of the best talent in the engineering profession. Oil is our best fuel, and California oil supplies two-thirds of the power, light and heat over the western third of the United States.

If we are to expand our own trade and develop products to supply cargoes for our ships, we must have power, we must have fuel for factories, mines and farms. In fact, of the necessity for decreased use of oil, where is the Pacific Coast to get this power? I believe there is no single solution, but instead a joint solution to this problem. Oil must be used more efficiently, both on land and on ships, through the development and increased use of the internal combustion engines, and on land hydroelectric power must be developed and used on a greater scale than ever before.

Intelligent conservation means efficiency in the use of our fuel—not curtailment that cripples industry. Intelligent conservation also requires development of natural resources now utilized.

This program brings an opportunity to engineers—more than an opportunity—it brings an obligation to each society of engineers and each individual—an obligation to those of us who have stayed at home to get out of the technical groove and to use imagination, to use initiative, to think in terms of the future and in terms of international growth, and to use our best energy as a pioneer regiment in the service of our own nation.

Work of a Repetitive Character Specially Suited to Women Employees

Employment of women in large numbers in the metal trades is regarded as entirely practicable by the National Industrial Conference Board. In a report on war-time employment of women in the metal trades the board asserts that employers generally commend women workers as more thorough and accurate than men. What they lose in quantity production, it was stated, is frequently made up by a higher quality of work.

The report summarizes information obtained from 131 establishments employing 835,015 men and 49,823 women. The investigation demonstrated that no extensive substitution of women for men has as yet taken place in the metal trades. Out of ninety-six establishments reported on substitution, only 10,801 women were employed on work formerly done exclusively by men, and of this number approximately one-half were in ten munition plants. While the work done by women in the metal trades embraces a wide variety of occupation, they are found chiefly in the lighter forms of operation. The report emphasizes strongly that work of a repetitive character is specially suited to women.

Output of Women as Large as That of Men

In sixty-six out of ninety-nine establishments where women and men were working at the same processes the average output of the women was as large as that of the men, and in many instances greater. In fifteen establishments the production of women was lower than that of men, while in the remaining eighteen it varied, depending upon different processes.

One automobile company which employed women in twenty-three departments assembling and inspecting materials and on many types of machine work asserted that job for job the women invariably outdistanced men. A gear manufacturing plant where women do sand blasting, grinding, drilling and broaching stated that the production figures for women workers ran from 15 to 25 per cent above those of the men. Women operatives in a munition plant manufacturing fuses were from 25 to 50 per cent faster than men on drill presses and milling machines.

Women are credited with being more careful in the use of tools and with producing less spoiled work. "Whether technical training would make women the equal of men in work of higher character," the report observes, "cannot be determined from available sources. At present, their lack of training automatically excludes them from highly skilled work."

In comparing wage scales in 106 establishments, it was found that the same rate for both prevailed in 53; in 29, piece rates were equal but women's time rates lower. But in 24 establishments employers were enforcing a lower pay for women in piece and time work alike. In 84 of 115 establishments the attendance of women was equal or better than that of men. Attendance of married women was as good as that of unmarried girls.

Manufacturers in the metal trades have found no lack of women applicants for positions. Whether they would continue to come into this employment after the war and under less pressing conditions was a question on which employers themselves were divided in opinion, although it was generally felt they would remain in the lighter grades of workers.—*Iron Age*

John A. Britton Tells Why Electricity Cannot Be an Economical Competitor of Gas for Heating

Also Asserts that Gas Would Be Preferable for Lighting Were It Not for Diversified Uses of Electricity that Make Its Supply in the Home Desirable

Conservation is the antithesis of waste, and the American people of to-day are rapidly being taught the essential and fundamental elements of conservation; perhaps not to the extent that it has had to be practiced in European countries, but they are rapidly learning the lesson, and their patriotic desires are to conserve that which the Government requests be conserved for the benefit not only of themselves from the simple point of economics in life, but for the benefit and preservation of those who are fighting on foreign shores, declared John A. Britton at the fuel conservation meeting of the San Francisco Section of the American Society of Mechanical Engineers.

In the industrial pursuits, in the rush and hurry of preparation of materials to build ships, manufacture of munitions of war and equipment for our soldiers and sailors, true economic conditions cannot be expected to obtain, but there are phases of industrial and domestic life in which conservation can take place where it is proven that a greater and more extended use of certain elements would tend largely to conservation.

All Other Elements Must Be Contrasted to Gas

The subject assigned me to-night is "Gas as a Conservation Measure." All other elements used as a fuel for the purpose of producing light, heat and power must be contrasted with artificial gas. In the production of light, heat and power we have as substitutes for artificial gas, and I am speaking only of artificial gas in relation to general distribution in the north central part of California, electricity, wood, coal, oil and the residual products of crude oil.

Electricity as a spectacular means of light, heat and power has never measured up to the standard of other means of producing heat, while fulfilling every expectation as a means of producing light and power. Heat by means of resistance never can, by reason of the high cost of unit construction in horsepower in production of heat, become a competitor of gas where the materials from which gas is generated are readily obtainable. And it is a conceded fact that the transportation cost of coal and oil from which gas is made to the point of manufacture is materially less per unit of heat than the transportation of energy to point of production into heat. The use, therefore, of electricity for heating becomes at once an economic waste of material and man-power. The same rule would apply to lighting, except for the diversified use of electric energy and its adaptability to intensive use and the freedom from personal care that is necessary in the use of gas and oil for that purpose.

Seven Gallons of Oil for a Thousand Cubic Feet of Gas

Wood as a substitute for gas may be at once dismissed, due to its rarity in this part of our State and its non-effectiveness for general economic use.

Bituminous coal is a factor to be compared with gas, and so are the crude oils of our State and the distillates of the oils. The absence of a good quality of bituminous coal in California renders the use of it as a competitor of oil or gas at once out of consideration. No patriotic and no economically inclined person would for a moment consider using coal which diverts men, material, ships, trains and other means of production and transmission from urgently needed war activities to bring that fuel from distant shores to him, particularly when the results obtained from its use could and are being more economically obtained by the utilization of a product obtained at a vastly less sacrifice of needed men and material power in our battle for world freedom.

When we consider the enormous labor required in the mining, transportation and distribution of coal, the lack of efficiency in its application for the production of heat and the non-valuable residuals produced by its consumption, such as clinker and ash, the necessity for transportation in the removal of these, and the man-power required for its utilization, as compared with oil which has only the minimum of cost in mining and transportation, with no element of waste to be disposed of after combustion, we can safely dismiss coal as a factor in this discussion and limit ourselves to the economic results by comparison of oil and gas, oil or itself and oil transformed into artificial gas by the modern process which is essentially Californian in character.

In the modern process of gas manufacture from crude oil it is safe to assume that not more than 7 gal. of oil is used for all purposes in the production of 1,000 cu. ft. of gas having a thermal value of 550 B.t.u. per cubic foot. This gives us 550,000 B.t.u. in 1,000 cu. ft., 70 per cent of which is applied to effective work in modern domestic appliances, and more when used in large industrial installations. The distribution of gas requires no transportation or man-power, nor are these involved in the disposal of residuals or by-products. It is available to the smallest consumer as well as the largest, and is to-day a most important factor in war work. The bridge of ships between our country and war-torn Europe, that bridge which insures us safety in a world worth while, has been made possible by the utilization of gas for purposes of riveting and welding, and the heating, bending and shaping of steel members more quickly, more uniformly and with less failures, increasing, it is estimated, the efficiency of man-power twofold.

Insurance Rates a Factor

In addition to the man-power and material savings in the use of gas over the use of coal or oil as a fuel, consideration must be given to efficiencies. In this we are apt to forget or overlook certain of the fundamentals due to familiarity which in this as in most other things breeds contempt.

The gas company in delivering gas to the consumer

eliminates the coal bin and ash pile, dispenses with the kindling box, provides hauling of material to and waste from the kitchen or factory, and solves the servant question. Our modern ideas of living make gas the only fuel which can be used without the need of a servant. The gas company supplies everything necessary excepting the match. Gas is adaptable. A very much higher percentage of the total heating value is utilized than in any other form of fuel.

Efficiency is evident, therefore the primary consideration is conservation. It means conservation of manpower, for all equipment is ready and manufacturers and industrials need not stop other important work to supply the needs of gas companies.

Oil transmission lines deliver the material to the plants, and man and transportation facilities are released for other work. Engineers, firemen, laborers, horses and wagons, and the minor materials necessary in the operation of small steam plants can be dispensed with if gas is the fuel. Insurance rates are lower for the fire hazard is reduced to a minimum.

There is no argument against the use of gas and every possible argument reason for its use. It is patriotic, it is sensible, it is conservation to the nth power.

Gas Heat in the Home

Important Advantages This Season and Every Season—The Obligation of the Gas Company

By EDWIN DEAN

The uncertainty of the coal supply has caused the public no little anxiety in regard to providing heat to protect the home, and gas heat as the best solution is receiving more serious consideration by the owners and occupants of homes than at any time in the past.

War conditions are not entirely responsible for this public interest. Recent improvements in gas-heating equipment have largely overcome past prejudices, and people are beginning to see greater possibilities in providing principal and auxiliary heat from gas fuel. It is no longer doubted that a good quality of gas can be so perfectly burned that it will not give off offensive odors or create unhygienic conditions.

The value and advantages of gas heat in the home are becoming better understood and more appreciated each year. The public is no longer dealing with gas heat as a temporary makeshift, but as an essential and permanent requirement. Many who saw the gas fire only from the sentimental viewpoint are now beginning to realize a higher and more important value as a protection in the home. Devices of high efficiency in successfully heating space are now in favor with the public and are the heaters of to-day and the future. The gas company that builds for the future must recognize this fact, and elevate the heating business to a higher plane than has been the practice in the past, and not be content in selling anything that burns gas—cheap "tin stuff," oil-heater competition, anything that will burn gas, many of which are as inferior in their principle of handling gas fuel as they are in construction.

Fallacies in Reasoning Hitherto Followed

It is really a crime for gas companies to permit salesmen to induce the public to install in the living rooms of their homes types of appliances that are not consistent or appropriate with other appointments and furnishings and often inadequate to meet the requirements. A home than can afford a gas range in the kitchen costing from $50 to $100 should not be hard to persuade that a substantial, dependable and well-finished gas-heating equipment should be installed in the living room. The owner of a good home will pay the price for a good device if he is properly handled, and he very often wonders why salesmen are so persistent and insistent on selling a heater that will not meet the requirements and that the purchaser is not interested in, and will endeavor to dissuade him from purchasing a better heater, which is also displayed on the floor. This discrimination is carried to such extremes in some instances as to cause the public to wonder and comment as to the extraordinary interest manifested. Some call it hysteria. Others call it sentimental fervor, and others hold and insist on an entirely different version; but all agree that it is there to an extent that is wonderful to behold, and from the standpoint of superior efficiency is certainly not justified.

In order to successfully spread the gospel of gas heating, the gas companies should carry a line of three or four substantial and efficient gas-heating appliances, and before recommending any one heater the salesman should ascertain the exact purpose for which the heater is required and the exact conditions involved in its installation, which information may be obtained by asking the following questions:

In what room do you wish to install the heater?
Is there a fireplace in the room?
Is it in a wood, marble, slate or brick mantel?
What is the size of the fireplace opening?
Is the fireplace lined?
How large is the room?
Is there any other heat?
Where is the nearest gas opening?

Do not recommend a room heater to be installed right in front of and on the hearth of a beautiful marble mantel, but select a heater that will best conform to the mantel and best suited to meet all of the requirements of the room and the customer.

Public Entitled to Reliable Information

Avoid literature that makes extravagant claims for efficiency and economy in operation. Always remember that as a public utility corporation the public are entitled to reliable information concerning the device they install that you are supposed to know most about. Handle devices that have made good with the public. Devices that when sold stay sold, and have made the best record by having the fewest complaints.

A word in conclusion in regard to the man in the commercial department of a gas company who contends that the sale of gas fuel for heating purposes is not interesting to their company for the reason that it is not an all-year-round business: Just consider the fact that when it is possible to do as much business in six months as you do all the year round in other fields, it should be a matter of great interest and moment for any corporation. Besides, it is well enough to remember that as a public servant you, perforce of the franchise, are operating under obligations to extend your energies and facilities to provide and protect public requirements to the fullest extent.

Lignite Becomes of Importance As a Fuel Resource

Carbonized Briquets for Domestic Service Compare Favorably with Anthracite Coal—Absence of Objectional Tar Gives It an Advantage Over Higher Grade Coal for Use in Suction Power Gas Producers Inasmuch as the Gas Goes to the Engine Clean and Tar Free

The following interesting developments in the use of lignite are brought out in Technical Paper 178, prepared for the U. S. Bureau of Mines by S. M. Darling:

Dried Lignite, for use on automatic stokers and in fuel-gas producers. Because of its more or less soft and comminuted condition the dried lignite cannot be handled advantageously by hand, but it can be used very satisfactorily by mechanical means.

Powdered Fuel, from the dried, pulverized lignite, for use in cement kilns, railroad locomotives and other large furnaces. Because of its high volatile content this pulverized lignite makes an exceptionally good powdered fuel.

Dried Lignite Briquets, for large hand-fired industrial furnaces and heating plants. Where it is necessary to handle the dried lignite with a fireman's shovel it should be briquetted. Tests of these dried lignite briquets in commercial boiler furnaces have proved them to be equal to good Middle West bituminous coal.

Carbonized Lignite, for use in suction power-gas producers. Tests of this product in carload lots have proved it to be an exceptional and unexcelled fuel for this purpose. Its chemical composition, as shown by analysis, is about the same as that of Pennsylvania anthracite. In carbonizing the lignite the objectionable tar found in all coals containing a substantial quantity of volatile matter is removed, and the gas goes to the cylinder of the gas engine clean and tar free. For the production of power in this way carbonized lignite is fully equal to anthracite coal, charcoal or bituminous coke, the standard fuels for such purpose.

This carbonized lignite can also be burned satisfactorily on the automatic stokers and grates used to consume the smaller sizes of anthracite.

Carbonized Lignite Briquets, for domestic service in house-heating stoves and furnaces, fireplaces and cooking ranges. This fuel, ton for ton, compares favorably with anthracite coal, and is an ideal domestic fuel in such rigorous climates as those of North Dakota and Alaska. In climates where the thermometer not infrequently goes to 40 below zero this demand is immediate and very large.

Sulphate of Ammonia and Producer Gas. The raw lignite, just as it is mined, when used in by-product gas producers of the Mond type, makes sulphate of ammonia, producer gas and some tars of undetermined value; there is no solid residue except ash. Lignite carries on the average about 1.40 per cent of nitrogen. If this nitrogen were wholly recovered as sulphate of ammonia the yield would be about 147 lb. per ton of lignite. This theoretical yield, of course, could not be obtained in commercial practice; the actual yield of sulphate of ammonia per ton of lignite gasified would be 70 to 80 lb. Ammonium sulphate is now selling for 6 to 7 cents per pound. Before the war it sold for 3 to 3½ cents per pound; but, as the price of this commodity is determined in world markets, it will probably drop back to near the pre-war price when industrial conditions become normal again. The gas yield per ton of lignite would be 60,000 to 70,000 cu. ft. of about 140 B.t.u. per cubic foot. This gas could be used as a furnace fuel or in a gas engine to produce power. If the latter, it would yield 700 to 800 hp.-hours per ton of lignite gasified.

The fact that the lignite does not coke in the sense that bituminous coal cokes, but rather crumbles, on being carbonized, makes possible a continuous and comparatively inexpensive distilling process, thus obviating the laborious and expensive charging and drawing of retorts as practiced in coal gas plants. It also parts with its volatile content more readily than does bituminous coal. The entire process is mechanical. The fuel need not be handled by manual labor from the time the lignite is loaded into the mine car until the briquets are en route to the consumer. The costly element of labor is reduced practically to that required for directing mechanical operations.

By-products from Lignite

In carbonization the lignite valuable by-products in the form of gas, ammonia and oils and tar are obtained.

The gas yield is upward of 10,000 cu. ft. per ton of lignite. The gas has a heating value of 400 to 450 B.t.u. per cubic foot.

A little more than one-half of the gas is necessary to carry on the carbonizing process; the balance can be used as a city gas for cooking, or for lighting, if burned in a mantle, for furnace fuel, or for generating power by means of a gas engine. Or, if desired, the entire 10,000 cu. ft. can be devoted to these purposes and the carbonizing carried on with lignite producer gas from a fuel gas producer.

Enriching to Higher Standards

If the gas should be used as a town gas, and a higher thermal value than 400 B.t.u. per cubic foot were required, the whole 10,000 cu. ft. can be enriched to the desired point. The director of the Oil Division of the Fuel Administration has proposed that the heating values of carbureted water gas sold for domestic use shall not be over 528 B.t.u. per cubic foot. Or, in a carbonizing oven of the Saskatachewan type, the poorer portion of the gas could be collected separately and only the richer portion, about 7,000 cu. ft., sent into the city mains without enriching. The inferior gas would not be wasted, but could be used as bench fuel, supplemented by producer gas. If it were desirable to do the carbonizing exclusively with the oven gas, the richer

portion available for distribution in city mains would be reduced to between 3,000 and 4,000 cu. ft. per ton of lignite.

Minimum of Sulphur

The fact that the sulphur content of lignite is small is a good feature. There is an almost entire absence of the corrosive acid resulting from the combination of sulphur with water when the lignite is burned. Should the lignite gas be used as a "town gas" for heating, cooking and illuminating purposes, there will be almost no sulphuretted hydrogen to be removed by means of hydrated oxide of iron purifiers.

Consider the matter of power: Of the yield of 10,000 cu. ft. per ton of lignite carbonized, 6,000 cu. ft. are required to carry on the process, leaving a surplus, costing nothing, of 4,000 cu. ft. of 400 B.t.u. per cubic foot, or a total of 1,600,000 B.t.u. A good gas engine uses about 10,000 B.t.u. per horsepower-hour. This gives 160 hp.-hours from the surplus gas from each ton of lignite carbonized. This power is comparable in cost with that derived from natural gas. It is fully as cheap as most hydroelectric power.

A Market for Briquets

This cheap power, of course, is limited by the quantity of lignite carbonized. But the first need of the people in northern climates is domestic fuel, hence the demand for these carbonized lignite briquets is very large. As the population and the demand for power increases, the demand for this carbonized fuel will increase apace. If the demand for power in any lignite field should outrun this supply of surplus gas the amount of power can be readily and cheaply augmented by the use of carbonized lignite in power-gas producers.

The by-products should at least pay the cost of carbonizing and briquetting, thus affording a first rank fuel in place of one of lowest rank at no additional cost.

It is not necessary to dwell upon the benefits that would ensue to these lignite sections by thus placing them in possession of a fuel equal to anthracite and a supply of cheap electrical power.

And these remarks apply to *one-third* of the coal resources of the nation.

The Ammonia

The ammonia is contained in the gas and gas water. It may be recovered as ammonium sulphate, a valuable fertilizer, as anhydrous ammonia, for refrigeration and other commercial purposes, or it may be treated as the source of other nitrogen products, some of which are of vital importance in the manufacture of explosives. As stated above, this and the Mond process are the cheapest sources of these products, but the amount which can be so recovered is limited to the tonnage of coal carbonized or gasified. The manufacturing practices in this connection have long been standardized.

The Oils and Tars

Just what is the most profitable disposition to make of the oil and tar products in this country remains to be determined. This is an industry by itself.

The simple distillation products of this oil can be put to many uses—fuel oil for furnaces and internal combustion engines, creosoting oils for the preservation of timber, waterproofing and preserving oils for leather and cotton and other fabrics, tar paper, roofing pitch, etc.

The pitch makes an excellent binder for the briquets, and will go far toward reducing the cost of this item if more valuable uses are not found for it. The anthracene oils, creosoting oils for the preservation of timber and creosote oils will without doubt find a ready market as wood and leather preservatives.

From the several fractions, upon exhaustive distillation and treatment, are derived hundreds of synthetic products in the way of paraffin, acids, antiseptics, photographic chemicals, aniline dyes, perfumes, drugs, preservatives, etc.

From the light oils come benzol, toluol, aniline dyes, photo-chemicals, certain drugs and many other chemical products. From the carbolic and creosote fractions are derived carbolic acid, creosote, picric acid, photo-dyes and chemicals, coloring materials and numbers of perfumes. The anthracene oils give, among other things, alizarin, a valuable acid used in the production of dyes, and carbolineum, used as a wood preservative. This latter product is analogous and equal in value to the carbolineum derived from European lignite, which before the war was imported in large quantities and retailed at 65 cents per gallon in barrel lots.

At first, of course, the simple distillation products will be procured and marketed as such. But as opportunity affords, each of these primary by-products will be taken up and synthetic chemical products manufactured. The exact course of this development is a matter to be determined in conjunction with a careful study of the market.

Almost all of these manufactured tar products have heretofore come from Germany. In 1913 the United States imported coal tar products of the value of $11,000,000 at initiating points, and these when they reached the consumer probably cost double that amount. Millions of gallons of creosoting oils for preserving timbers have been imported annually. That supply is now cut off and the market value of these commodities on this continent greatly enhanced. It is not unreasonable to expect that in the future a large part of this demand for tar products will be supplied from these immense stores of lignite.

Certain Arkansas and Texas lignites are known to be substantially undeveloped cannel coals containing a large percentage of volatile matter. It is probable that the day will come when we will distill these lignites to recover products similar to the oils now being recovered from the oil shales of Scotland and elsewhere.

Possible Conservation of Petroleum and Natural Gas

The bringing onto the market of the Texas lignite would release large quantities of Texas petroleum and natural gas for other uses, and the conservation of our petroleum resources is a more important matter than the average man appreciates.

Of our original supply of petroleum 42 bbl. per capita have been used and only 70 bbl. per capita remain for the future. About half of the petroleum currently produced is used as fuel for steam raising. The possibilities in the use of petroleum and its products in connection with the navy, airplanes, the merchant marine, automobiles, motor trucks, tractors, etc., are so great

and vital that before long it will be looked upon as an inconceivable folly that oil should ever have been used for steam raising, the most glaring economic perversion that this country has ever been guilty of.

If we are to prevail against our enemies in time of war and maintain our commercial prestige during peace, we must not be less diligent than either friends or foes in the matter of developing and conserving our natural resources.

A market for the fuel oils derived from carbonization of lignite is assured.

Advantages in Carbonizing Lignite

A number of substantial economies from the mine operator's and coal dealer's standpoint become available through the carbonization of the lignite.

The prime advantage is that the lignite is changed from an unstable commodity into several stable and valuable products, the demand for every one of which is large and increasing.

In the use of raw lignite under present practice thousands of tons of screenings are annually wasted. The coal is forked over in the mine room and screened again at the surface when being loaded into railroad cars. If the problem is handled as indicated in this work this waste would be eliminated—every pound of clean lignite broken from the seam could be put to some profitable use.

The raw lignite cannot be stored economically; the treated product can; and this results in another large saving, in that it would enable the mines to operate under stable conditions the year around, instead of only during the winter months, as at present.

Some study should also be directed to designing appropriate apparatus for the consumption of these classes of fuels instead of using devices already on the market intended to consume fuels of quite different character.

Unquestionably the experiments so far conducted open very large economic and commercial possibilities, and it is believed that a little wider and more thorough investigation will point the way for the establishment of carbonizing and briquetting plants throughout the lignite-bearing sections of the country, thus bringing effectively into the industrial world one of our largest natural resources. The results will be not only the production of a first-class solid fuel, so much needed, but the saving of many by-products valuable in war as well as peace, and the easing of overbalanced transportation conditions throughout the country.

In conserving the coal supply and in increasing the electrical power supply of the country, lignite resources must be developed as well as water power.

There is a very large demand for electrical power in central Texas close to the Texas lignite beds. Water is rarely present in sufficient quantities for condensing purposes in connection with steam-turbine power plants. It looks as if the future supply of power for central Texas must come from lignite, used in the raw state in by-product producer gas plants, as carbonized lignite on automatic stokers under boilers or in power-gas producers, or as surplus gas from the carbonizing process used in a gas engine.

There are several uses for the lignite retort gas, as a town gas, as a furnace fuel and in a gas engine. There are also several uses for the carbonized residue in gas producers, on stokers, or in briquetted form. Therefore it ought not to be difficult to market in one way or another either of these products, no matter how large the demand for the other might become. It is not easy reasonably to conceive a limit to the market for sulphate of ammonia or hydrocarbon oils and tars.

These different products can be used in so many ways that an industry of this kind could readily be made to fit the industrial requirements of any ordinary community.

The carbonizing of this lignite will place the lignite-bearing regions on a par from a fuel and power standpoint with those parts of the country that are favored with bituminous coals. It will give a better domestic fuel in the way of carbonized lignite briquets, a better gas producer fuel in the form of carbonized lignite, enormous quantities of gas to be used for fuel or power purposes, large quantities of fertilizer in the form of sulphate ammonia, and a great amount of oils and tars. And the by-products derived from this process should more than pay the cost of making the transformation.

This project of developing our lignite resources is not a small matter.

Take the North Dakota section as an illustration.

Into this section there are now being imported a minimum annual tonnage of 2,000,000 tons of bituminous coal and 1,000,000 tons of anthracite, every pound of which should, and some day will, be replaced with fuel from the Dakota lignite field.

To replace these 3,000,000 tons would require the carbonizing annually of 6,000,000 tons of lignite, yielding 3,000,000 tons of solid fuel, 18,000,000,000 cu. ft. of surplus gas (costing nothing), 45,000 tons of sulphate of ammonia, and 60,000,000 gal. of tar distillates, comprising benzol, carbolic, creosoting and anthracene oils, paraffin, etc.

The waste in dollars and cents involved in two years' importation of the foreign coal into that territory would probably pay for all the equipment necessary to carry on the industry on the scale outlined.

Bear in mind, too, that the Texas lignite situation affords an even greater opportunity for economic saving. The opportunity in Alaska must be nearly if not quite as large. And there are many smaller deposits of lignite scattered over the Southern and Western States where relatively smaller savings can be made in similar fashion.

In several sections of Texas there are merchantable deposits of iron ore. Limestone is close at hand. The development of these deposits has been unprofitable because of the high price of coke, but under the present stimulus of high war prices for pig iron a blast furnace will soon be put into operation at Rusk, notwithstanding the fact that the Alabama coke, which will be used, will cost $16 per ton at Rusk. The carbonized lignite, or the carbonized lignite briquets, should replace this coke at not more than half the price. The lignite, iron and limestone lie within a few miles of each other. The development of a steel industry in Texas surely should obviate the necessity of large shipments of iron products from Eastern United States into that section.

Our country is engaged in a great war. Although this war may not strain our resources to the utmost, yet our paramount duty in order to shorten the conflict, and to maintain the nation's commercial prestige after the war, is to conserve every element of strength. The relief to be derived from this proposed development of

our lignite fields will be immediate; not large, comparatively speaking, perhaps, the first year, but increasing by leaps and bounds as the years go on and the industry acquires momentum.

NEED OF GOVERNMENT AID FOR FURTHER INVESTIGATION

The concerns now engaged in mining lignite are not strong financially. They cannot afford to hire the technical and engineering skill which can be supplied by the Bureau of Mines. They need and are asking for help, and it is believed that a measure of governmental assistance on the technical features presented is amply warranted.

While any encroachment by the Government upon what is popularly deemed the field of private industry may be looked at askance by the public, yet, if the nation's natural resources are to be conserved and the fullest possible benefit gotten from them, some authority having a wider vision than any single industrial concern intent upon earning dividends must exercise a certain degree of surveillance and afford a measure of constructive help in co-ordinating the innumerable features of industrial inter-relationships. A constructive economic policy of this character is a true Government function, and should insure rather than jeopardize legitimate gain from private enterprise.

Our pride should be not in our mere possession of this bountiful land, but in the extent to which we discover its resources and in the degree of efficiency to which we devote them to the service of mankind.

Publications

Efficiency in the Use of Oil Fuel

Flexible backed; 5x7 in.; 86 pages; illustrated. Author, J. M. Wadsworth. Issued by U. S. Bureau of Mines, Van H. Manning, director, Washington, D. C. Price 15 cents.

A handbook for boiler plant and locomotive engineers. Compiled by the Bureau of Mines, from its own investigations and from leading authorities, in co-operation with the United States Fuel Administration. The emergencies of the war have brought before the public with startling directness the need for greater efficiency in the utilization of our mineral resources. As users of fuel oil have shown a lively interest in helping to save fuel, the Bureau of Mines believes that an educational campaign to develop methods for eliminating waste will receive their heartiest support. Such work fostered primarily as a war measure must prove a permanent and lasting benefit to the petroleum industry and to the nation.

In 1917 there were 160,000,000 bbl. of fuel oil burned in the United States. At a conservative estimate 40,000,000 bbl., or one-fourth of the total, might have been saved by more intelligent operation of plants and by proper firing. Therefore all users of oil fuel are urged to take steps immediately to reduce their fuel consumption by carefully observing the principles stated in the pamphlet and by recognizing the value of engineering advice in the design and operation of their plants.

A saving, however small, contributes immediately to higher efficiency and larger profit from a plant, and the aggregate saving at all plants will add tremendously to the effectiveness of the nation in the present titanic struggle. Production and manufacture will then be kept at a maximum, and the value of the fuel oil will be utilized increasingly.

Methods for Routine Work in the Explosives Physical Laboratory of the Bureau of Mines

Technical paper 186 of the U. S. Bureau of Mines, Van H. Manning, director. Authors, S. P. Howell and J. E. Tiffany. Paper backs; 9x6 in.; 60 pages. Obtainable from U. S. Bureau of Mines, Washington, D. C.

The methods now used by the Bureau of Mines for making physical tests and examinations in the explosives physical laboratory represent the result of more than nine years' effort in devising and improving laboratory routine to determine not only the explosives that are relatively safe for use in gaseous and dusty coal mines, but also those most suitable for use in metal mines, tunnels, quarries and other engineering operations. This paper was compiled for the purpose of facilitating work in the explosive physical laboratory and not for publication. However, as the bureau is constantly receiving inquiries regarding the methods of testing used in its explosives physical laboratory, and as the results of the bureau's experience may be of use to explosives engineers and chemists and the manufacturers of commercial explosives, the paper is published for their information.

Coke-Oven Accidents in the United States

Technical paper 206 of the U. S. Bureau of Mines, Van H. Manning, director. Paper backs; 9x6 in.; 18 pages. Author, Albert H. Fay. Published by and obtainable from the U. S. Bureau of Mines, Washington, D. C.

Reports received by the Bureau of Mines from operators of coke ovens show an increase in the number of fatalities and injuries during the calendar year 1916 as compared with previous years. The number of men killed in 1917 was 76, as compared with 45 in 1916. The total number of men reported employed for 1917 was 32,417, as compared with 31,603. The fatality rate in 1917 (based on the number of 300-day workers) was 2.14 per 1,000; in 1916 it was 1.32. The injury rate in 1917 was 188.59 per 1,000 men employed; in 1916 it was 153.49.

The reports tabulated represent 69,637 beehive ovens and 7,276 by-product ovens. In 1917 the average number of days active was 329; in 1916 the number was 324. The accident figures presented may not be complete for the entire industry, but they are representative enough to point out some of the principal hazards. The increase in accident rates is not necessarily on account of the work being more hazardous; rather it is due to the keeping of better records, those better records more nearly representing true conditions.

This is the third report published by the Bureau of Mines giving separate accident data for beehive and by-product ovens and indicating a greater hazard for the latter than the former.

Tests to Determine the Rigidity of Riveted Joints of Steel Structures

University of Illinois Bulletin 104. Authors, Wilbur M. Wilson and Herbert F. Moore. Flexible board backs; 9x6 in.; 55 pages; illustrated. Obtainable gratis from Engineering Experiment Station, University of Illinois, Urbana, Ill.

In analyzing the stresses in a rectangular frame, it is customary to assume that the connections are rigid. If the connections are not perfectly rigid, it is evident that the actual stress may not be equal to the computed stress. Tests to determine whether serious error is introduced into computations for stresses in steel frames by the assumption that the joints are perfectly rigid are given in the bulletin.

The test pieces used were connections which are types common in engineering structure and which resist loads and moments by methods fundamentally different. The connections were tested in pairs in a 300,000-lb. Olsen four-screw testing machine.

Brown Instrument Company Gets Out Unique Chart and Catalog of Complete Line

A very useful and unique chart has recently been gotten up by the Brown Instrument Company, of Philadelphia, Pa.

On one side of this chart is given the melting points of chemical elements with color scheme of the relation between heat colors and temperatures. On the other side is given conversion tables of Fahrenheit and centigrade scales, as shown in the accompanying illustrations. There are two holes at the top of this chart with a blue cord through them. Attached to this cord is an envelope containing a hook, which is provided for hanging it up in a convenient place where it can be had when needed.

An eighty-page catalogue describing the complete line of Brown Indicating and Recording Pyrometers and high temperature measuring instruments has also been completed.

In this catalogue is illustrated some of the most improved instruments used in present-day pyrometry, high resistance pyrometers, having an internal resistance of anywhere from 600 to 1,000 ohms.

The new precision heatometer is fully described. This is a direct reading temperature indicator in which all errors due to temperature coefficient or line resistance are eliminated. It has been designed for the measurement of all temperatures within the range of either platinum or base metal thermo-couples.

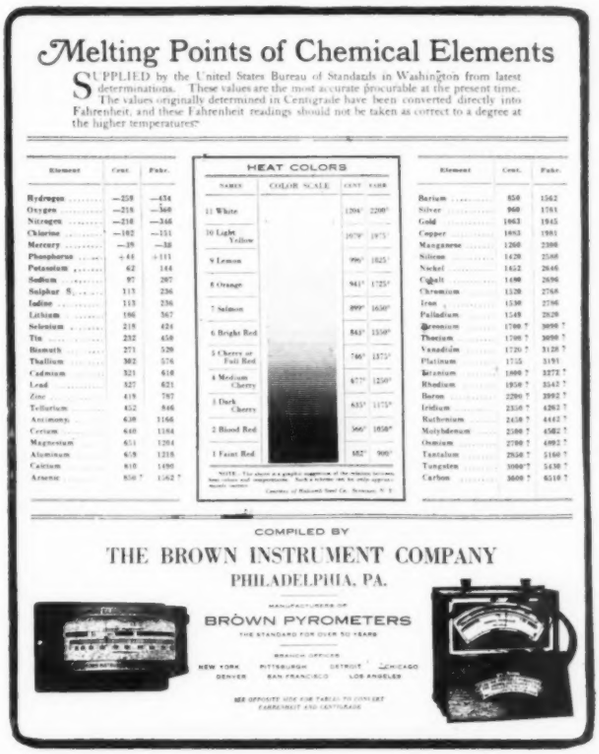
The new feature of the Brown Automatic Temperature control and a complete description of the Brown Automatic Signaling Pyrometer are given.

Further on in this catalogue is shown for the first time the Brown Transformation Point Pyrometer, a patented instrument, which determines the transformation points of steel. This is illustrated by a chart from the Bethlehem Steel Company, showing the AC-1, AR-1 and AR-2 points of 30 per cent nickel steel.

The various types of platinum and base metal thermo-couples and protecting tubes are described at length. Suggestions for the installation of couples and methods of standardizing pyrometers are thoroughly discussed.

The Brown resistance thermometer, radiation pyrometer, expansion pyrometer and quick-acting pyrometers are all shown. Instruments for lower temperatures, such as recording long-distance thermometers, mercurial pyrometers, are also illustrated.

Catalogue and chart may be had upon application to the Brown Instrument Company.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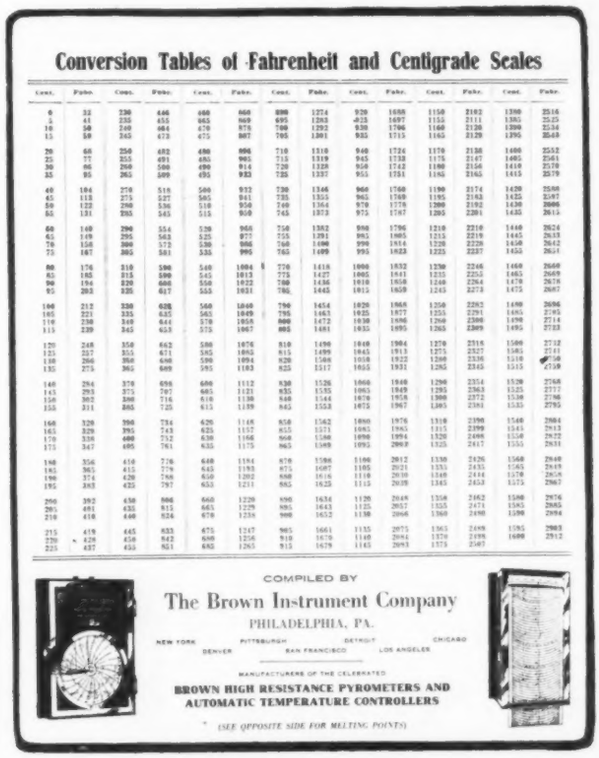
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After-the-War Expansion

Some agitation has been started looking to stimulate construction after the war. In the viewpoint of the AMERICAN GAS ENGINEERING JOURNAL this agitation is based principally on ignorance.

Many gas companies have met demands that have taxed their capacities almost to the breaking point. Yet is there in this an indication that their capacities are inadequate?

Most of these plants are built to meet a load that was not normally to have been expected for years. A terribly exceptional winter, plus abnormal situations due to coal shortage as a consequence of war-time expanded industrial activity, brought about an increased demand in some cases almost double what was to be expected within the next decade. There was also in some centers a vastly expanded population.

To argue from the events of last winter that the gas plant in the average territory is below capacity under the conditions it will meet in the subsequent few years is crassly stupid.

The present is no time either to say or not to say that vast expansion of gas plant capacities must come within the next few years. We must await events.

The fact remains that the population of the country has not overnight been appreciably increased. There has been, however, a considerable shifting about.

Is there to be a considerable reshifting about, and if so are we to see our people located a year from now in approximately the same places they were two years ago? The answer to this problem has a paramount importance in determining if there is to be expansion of gas plants.

One city we have in mind has almost doubled its population in the last three years. The gas company did considerable construction to meet this sudden expansion. Perhaps to-day its capacity is still inadequate. Is anyone to say that as soon as it can get the materials it should still further expand?

Is there any reason, on the basis of our present knowledge, to believe that with the termination of munition work the vast horde of workers who have assembled there will not just as suddenly disperse? What if this should happen and the gas company would have a plant adequate to fully meet the demand of this city's present population? It would have a capacity that its city, under normal conditions and with the pre-war methods of new business getting, would not grow up to in a generation. And by that time the equipment would be obsolete.

Further, if we are to calculate the average future winter on the basis of last winter, it might be advisable for some of us to migrate. In Hayti, we understand, there is room for a vastly increased population, and the winters are seldom chilly. Life is easy, they say, the natives having lived for years without doing anything more than garner the bounties nature provided.

But this would be an absurdity. Last winter was an abnormality in the highest degree. Fortunately the gas companies, as a rule, were able to adequately meet its demand. But to prepare with a proper factor of safety to meet such emergencies, as a rule, would require such capital changes as to make rates soar to such a point that the old-time figures we sometimes wonder at would pale by comparison.

Also it must be remembered that some companies among those most sorely tried have not sat back and twiddled their thumbs complacently over the splendid performances they staged last winter. There *has been* construction and expansion, more than one who gets his facts from an overfertile imagination would conceive possible in these days when it sometimes seems that everything is stopped.

The AMERICAN GAS ENGINEERING JOURNAL does not say that there will not be great construction activity in the gas field promptly after the war. Neither does it say there will. It merely states that from the facts of the present time there is no warrant to lay down definite plans one way or the other

People have learned to save gas. They will not forget once the war is over. With an increase in population there is at once a deficiency in demand once war-time demands are removed. If in some territories there is to be to a degree depopulation, there is another deficiency to be added. The big problem for the gas companies, in the view of this JOURNAL, is to find new consumers to make up for the loss due to curtailment in demand of existing consumers, and to find new uses for gas to take the place of the uses that will disappear when the war ends. It is very possible then that they might be so successful in their efforts as to make vastly expanded plants a real necessity.

When the End Comes

When the end comes--the war's end—what will it mean to the gas man? Will he plunge immediately into material thoughts?

We have developed spiritually. Before we were going back The best of us unconsciously were being engulfed in selfish impulses. So in fact was all humanity. The war has not been altogether without compensation. We have been revolutionized mentally. To-day each man thinks first of his neighbor. We have learned to sacrifice self in the common weal, and have found joy in it, have discovered a new emotion.

The gas man has indeed reason to feel proud of the part he has played even on the basis of published facts. But all has not been published, could not have been in the national interests. These things will come out in time. The worker in the ranks who has sensed them dimly will then have cause for satisfaction immeasurable that his lot has been cast in the gas industry.

We have our faults, many of them. So has all humanity. But these faults have not caused us to fall short in our obligations to the nation and to the future.

For many it has been a meagre living. Yet we have subscribed amply our share in the national loans and in war charity. We have done more; have labored in hours and out of hours that the people we served might not suffer.

"And to what avail?" some might ask. Has there been appreciation? Have the outcries that have followed petitions for rate increases been any more temperate than was hitherto the case?

That is largely aside from the question. Sacrifice is its own reward. Service in great crisis is compensated for in our own thoughts. But, incidentally, it may be remarked that one who reads closely will have found that the hostile outcries that have arisen sounded palpably hollow. There was no mass behind them.

Aspiring politicians and demagogues we will always have with us. But be not deceived by their railings. Seek farther. Go beyond them to your public. You will find, we are certain, that you have it with you. The public understands--perhaps more than you give it credit for.

John A. Britton Contrasts Gas with Electricity

Though in the gas industry John A. Britton is classed as a gas man, in the popular conception and in the mind of the average engineer, due to the vast hydroelectric developments of the company he heads, he is essentially an electrical man, the gas activities of his company being overlooked.

Some time ago at a meeting of the San Francisco Section of the American Society of Mechanical Engineers John A. Britton contrasted the relative merits of gas and electricity with a candor that we have seldom encountered. There was not the mountebank tendency to pull the wool over someone's eyes and the deliberate attempt to submerge pertinent facts, even when addressing technical societies, that has been almost usual when such contrasts have been made.

Mr. Britton dismisses somewhat abruptly electricity's claim as a space-heating agency. But he is not the first to do this His remarks are exceptional only in the clarity of the reasons he advances for the practical impossibility of applying electricity to this use in competition to gas.

Where Mr. Britton does startle, if we consider him essentially an electric man, is in his frank statement that electricity owes its place as an illuminant, not to its superior merits over gas as an illuminating agency but to its diversified uses and exclusive features that enhance the convenience of its usage.

No gas man who puts accuracy ahead of partisanship will dispute these contentions.

For example, there are people who have a horror of leaving any flame of any kind, however small, alight in

the house when they retire for the night. We know one individual that conscientiously screws down the shutoff on his gas range lighter every night and lights it again in the morning. His explanation is that the shade or curtain of a nearby window might blow over it and catch afire. He admits the possibility is very remote, but will not concede that it is altogether absent. The banked fire in the furnace in the cellar does not disturb him, perhaps because there are no fripperies in the cellar and the furnace appears to the eye to be so completely enclosed.

It would be a practical impossibility to get such people, and they are many, though possibly not to such an extreme, to use gas lighting in their bedrooms to the exclusion of electricity.

An inspection of the bedroom incidentally of a citizen who is fairly well informed in regard to the conveniences that exist would also be illuminating as to the obstacles that stand in the way of the gas-lighting salesman.

Here we will find almost certainly, if there are young children, a small electric stove, a switch or lamp with switch cord nearby the bed, a reflector type of electric heater to warm the room if it is necessary to get up in the middle of the night, perhaps a fan and most certainly a portable lamp or two on dresser or bureau. To have these conveniences with gas would necessitate some flexible tubing at least—always a grim spectre to the timid—and undoubtedly a weird arrangement of piping, such as would tax the ingenuity of the best distribution men we have.

There is not pretense in Mr. Britton's statements. He discusses gas and electricity without partisanship. In basic merit he places all the advantages on the side of gas, even in lighting. But in the latter field he demonstrates clearly why electricity has won its place. He gives us an example that can well be followed in the gas field as well as in the electric.

Instead of ignorantly belittling a competitor, closing our eyes to its merits, we should study closely what seem to be its advantages and try to overcome them by the clear presentation of counter advantages and education.

The tendency to mountebankism in lighting and heating salesmanship has by no means been confined to the electric industry and to electrical publications. The gas field, too, has been guilty.

We cannot control the future conduct of the electric industry in this regard, and must leave it to do its own housecleaning. We should, however, take great pains to keep our own slates clean, and discourage any tendency on the part of gas journals with mob-appeal proclivities to reflect a false impression of our attitude in this regard.

The AMERICAN GAS ENGINEERING JOURNAL believes in gas for lighting, considers as a cold business proposition that the welfare of the eyes is ample compensation for the sacrifice of even more conveniences that electric lighting offers and is accompanied by, and knows that the fire risk of gas is less than that of electricity. But the AMERICAN GAS ENGINEERING JOURNAL believes it the most productive business policy to sell our product for any purpose only on the basis of its merits, not on that of deception as to good qualities of a competitor.

How the Gas Companies Are Helping the Nation

THE MAJESTIC MANUFACTURING COMPANY, of St. Louis, makers of gas-fired ranges and other gas equipment, subscribed for a total of $221,800 of the Fourth Liberty Loan bonds. R. H. Stockton, president of this company and a director of the Laclede Gas Light Company, of St. Louis, increased his original subscription by $50,000 on the last day of the campaign, when it looked for a while as if St. Louis might not "go over the top" on schedule time.

Employee of the United Natural Gas Company Died of Wounds

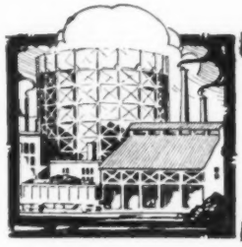
SERGEANT F. BRINTON TROSCH, attached to Base Hospital 57 in France, formerly of Pittsburgh but later of Oil City, Pa., is dead of wounds, according to word received by relatives. He was employed by the United Natural Gas Company before he went to France.

Southern Representative of Ruud Manufacturing Company Dies at Camp

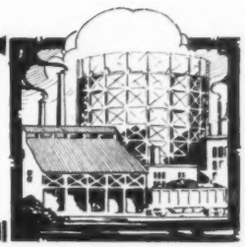
GEORGE SLIGO, the Southern representative of the Ruud Manufacturing Company, died of influenza at Camp Gordon, Ga., Oct. 12, after a very brief illness. On Sept. 1 Mr. Sligo entered the Civilian Officers' Traning School at Camp Gordon and was doing well in his work for a commission on the firing line in France.

Employee of Albany Municipal Plant Dies of Influenza at Training Camp

WILLIAM J. MCMAHON, JR., eighteen, eldest son of William J. McMahon, of 7 Cuyler Avenue, Albany, N. Y., died Oct. 13 at Niagara University, where he was attending a student army training school. He was taken ill on the 11th with influenza and pneumonia developed. About six months ago McMahon enlisted in the United States cavalry, and was sent to Fort Slocum for training. He failed to pass the physical examination at camp and was discharged. Upon his return to Albany he secured a position in the Adjutant General's office, where he worked for some weeks. He later went into the auditing department of the Municipal Gas Company.



NEWS OF THE GAS INDUSTRY



Million Dollar Gas and Electric Concern Incorporated at Wisconsin

The Interstate Power Company, Lancaster, Wis., with a capital stock of $1,000,000, was incorporated recently at Madison. The company will furnish gas and electric power in Grant, Crawford and Richland Counties, Wisconsin, and in five counties in Iowa. The incorporators are Chauncey E. Blake, William J. P. Aberg and Clara H. Beyer, Madison.

Addison to Again Have Gas Supply

Addison will soon again be supplied with natural gas, as arrangements were made recently at a conference held at Elmira by all parties concerned in the transaction.

The papers have been drawn up and have been sent to Albany. The rate for the gas will be 70 cents per 1,000, with 5 cents discount, or 65 cents net rate.

Educational Lecture on Manufacture and Distribution of Illuminating Gas Delivered by Kings County Representative

"The Manufacture and Distribution of Illuminating Gas" was the subject of a lecture delivered Thursday evening, Oct. 31, at Public School No. 160, Fort Hamilton Avenue and Fifty-first Street, by Charles Otten, Jr., general superintendent of the Kings County Lighting Company, Brooklyn, N. Y. This was the first of a series of talks on gas that will be given by representatives of the Kings County Lighting Company on the Department of Education lecture course. Every branch of the business will be taken up in order and men long experienced in this field will be heard. The lectures, which are illustrated, are also to be given before numerous civic, church and other organizations during the winter.

Kansas City Fuel Administrator Gives Order to Cut Off Gas Supply If Used in Furnace

"People who are burning gas in their furnaces must discontinue the practice immediately or forfeit their right to gas consumption for the rest of the winter," said Walter L. Lampkin, Kansas City, Mo., Federal Fuel Administrator, recently.

Mr. Lampkin has taken up the matter of gas consumption with E. L. Brundrett, president of the Kansas City Gas Company, with a view to determining the number of consumers in the city who use gas in their furnaces.

Then he will order the gas supply cut off from those who disobey the city ordinance passed last winter, forbidding the use of gas in furnaces.

"The housewife of Kansas City is the first on the preferred list of gas consumers," continued Mr. Lampkin, "and this office is going to see to it that there is no gas used for other purposes than cooking and lighting. There are a few industries in Kansas City that cannot change from gas to other fuel, but they will have to take chances on getting gas after the gas for cooking comes out of the reservoirs."

Benwood Council Condemns Open Gas Lights

The city council of Benwood, W. Va., at a recent meeting passed an ordinance making it an offense, punishable by fine, to burn gas for lighting purposes without mantles. Open gas jets are prohibited. The purpose of the ordinance is to conserve the use of fuel.

Industrial War Service Committees to Meet at Atlantic City, Dec. 4-6

Plans for assembling at Atlantic City, Dec. 4, 5 and 6, all members of the country's more than 300 industrial war service committees for a great war emergency and reconstruction conference were announced Oct. 28 by the War Service Executive Committee of the Chamber of Commerce of the United States.

The meeting will bring together from 2,000 to 3,000 industrial leaders to discuss problems that have arisen with the war. National councillors of the chamber, representing more than 1,100 commercial and industrial organizations which comprise its membership, will meet at the same time and place.

The main purpose of the conferences will be the determination of practical methods whereby industry may co-operate still more closely with the Government through a more centralized scheme of organization. This probably can be accomplished best by the creation of a federation of all the war service committees. Questions of reconstruction, too, will be taken up.

For nearly a year the chamber has been engaged in directing the organization of war service committees in all lines of industry to assist the Government in mobilizing most effectively the country's industries for prosecution of the war. It is evident that, however far away the end of the war may be, it is necessary to begin to outline a general program of organizing business for the period of reconstruction.

Single industries, acting individually, can scarcely hope to prepare for reconstruction on the scale that will be necessary, and a federation of all the war service committees of all the industries will be of inestimable value in co-operating with those agencies of the Government to be created to deal with this subject.

The war service committees represent the most important and best

informed body of business men ever associated for a practical and patriotic purpose, and the conference therefore will be one of the most important business gatherings ever held in this country.

Certain common interests and duties that bind together all the war service committees include:

War Industries.—To keep efficiency and production at the highest possible point through stable labor conditions and steady flow of materials through plants, thus assuring the utmost aid in carrying out the war program of the Government.

Non-War Industries.—To keep plant organization and production from falling below the danger line in the face of shortage of materials, labor and transportation.

Jointly.—To face squarely and constructively the reconstruction period and to be ready through accurate and exhaustive study to lay before such governmental agencies as may be created to deal with reconstruction the necessary data bearing on the subject.

Questions foremost at this time in the minds of every business man will be discussed at the conference by the best authorities that can be assembled. Speakers who already have accepted invitations to appear include Secretary of Commerce William C. Redfield, A. C. Bedford, James A. Farrell and Paul Warburg.

The conferences will include general sessions at which questions common to all industries will be taken up, sessions of committees within particular industries at which specific industrial problems will be discussed, meetings of related war service committee groups, and conferences of individual war service committees. National councillors of the Chamber of Commerce also will hold separate sessions.

The main conferences will be held on the Million-Dollar Pier.

Petition Filed for Increase at Burlington, Vt.

A petition has been presented to the Vermont Public Service Commission by the Burlington Light & Power Company for authority to increase its gas rates 20 cents per 1,000 cu. ft. If allowed the new rate will become effective in December. The company claims the increase cost of coal, oil and labor makes an advance in rates necessary, inasmuch as the additional rate is 7 cents per 1,000 cu. ft. less than the increased cost of manufacturing. The present rate is $1.20 per 1,000 cu. ft., with 10 cents per 1,000 cu. ft. discount for cash ten days after the bill is rendered.

Commissioners Grant Petition of the Boston Consolidated Company

The Boston Consolidated Gas Company petitioned the Massachusetts Board of Gas and Electric Light Commissioners to raise the standard price of gas per 1,000 cu. ft. from 90 cents to $1, because of greater burdens which have been imposed upon the company and because of the great increase in the price of labor and material and other changes in conditions substantially increasing the general cost of the manufacture and distribution of gas.

After notice by publication and by personal service upon the Mayor of Boston and chairmen of the selectmen of Brookline and Melton, the board gave the company and all other persons interested a public hearing in Boston.

The sliding scale was adopted in Boston in 1906. The price was fixed at and limited to 90 cents, and the standard rate of dividend was fixed at 7 per cent.

After the adoption of the sliding scale the company reduced the price of gas on June 30, 1906, from 90 cents to 85 cents, and on July 1, 1907, to 80. This last price continued until Jan. 1, 1918, when it was increased to 90 cents.

The board was of the opinion that the present extraordinary conditions are not likely to outlast the war, even assuming that pre-war conditions are not immediately restored. Therefore it seemed expedient to temporize by making such adjustments as seemed necessary for the moment, but to postpone until the return of normal conditions any final conclusions upon debatable rate questions.

The board therefore ordered that from and after this date the standard price of gas to be charged by the Boston Consolidated Gas Company for gas supplied to its customers shall be $1 per 1,000 cu. ft. for the duration of the war, but not exceeding one year from said date in any event, unless meantime lowered or raised upon petition as provided by law.

Committee Recommends That Lima Company Be Allowed to Increase Its Rates

Declaring that the Lima (Ohio) Gas Company has already operated its artificial gas plant at a loss of $15,200 this year, the franchise committee of council recently recommended that a new rate schedule be granted the company whereby artificial gas may be sold at $1.25 per 1,000 ft.

Member Carl Griebling was at the head of a committee from council which audited the books of the company. They found that at the present rate of $1 per 1,000 the company is losing money on every foot of gas it handles. Accordingly, it will be recommended when council meets next that a new franchise be drawn granting the company an increase of 25 cents on the thousand, to become effective with the passage of the resolution. The present franchise expires next April, and it is possible that, in the event a new franchise is not granted, the old one will be repealed and the company permitted to operate under a $1.25 schedule until the new one is granted, which will fix that rate for the future.

The contract with the city under which artificial gas is furnished for 325 street lamps is separated from the price-fixing ordinance, and the price now being paid by the city will stand.

Increased Rate Allowed Wilmington Company

The board of public utilities commission in session recently permitted the Wilmington (Del.) Gas Company to increase its rates from $1.15 to $1.40 per 1,000 ft. of gas. The new rates effective as of Oct. 20, and shall remain in force until the further order of the commission.

The commissioners also allowed the request of the company to make a minimum charge of 50 cents a month for meter use where the gas consumption of the user does not amount to this sum.

The request of the company to add a penalty of 10 per cent of the bills to the face of the same when not paid within ten days after being due also was allowed.

Following the adoption of the resolution allowing the increase, Harold S. Schutt, general manager of the company, stated that with this assistance the contemplated improve-

ments to the plant could and would be made. He also added that the company would do everything in its power to prevent a shortage of gas in Wilmington next winter.

Huntsville Gas Plant Closed

The Huntsville (Ala.) Gas Company's plant closed down recently because all of the employees are sick with Spanish influenza and the city has been without any gas at all since that time. A great many lines of business, including the newspapers, have been very greatly handicapped. Numerous business houses are closed, proprietors and all employees being sick with the prevailing malady.

Uses Gas Plant's Waste Heat in Baking Bread

In the conservation of fuel, Iceland has a new scheme. The city council of Reykjavik, Iceland, has now begun the baking of bread in a special bakery in connection with the local gas works, where modern machinery has been installed in a special building. The result was excellent, in that the waste heat from the gas works is being used in a practicable and profitable manner, and in the course of a short time all the black bread needed will be baked in this unique factory.

This idea was originated by a young student, and it is considered one of the best means of saving coal, time and money. Three-pound loaves have been completely baked in three hours in considerable numbers.

This is said to be the first time that bread has been baked with the waste heat from a gas plant.

Massachusetts Board of Gas & Electric Light Commissioners Dispose of Many Rate Cases

Since the beginning of this year June 30, 1918, the Massachusetts Board of Gas and Electric Light Commissioners has received petitions from ten local companies which it has decided upon, and from three, Attleboro, Lawrence and Plymouth, upon which as yet no decisions have been reached. These petitions all cite the unprecedented rise in prices of labor and material as necessitating a rise in price of gas as sold to customers. In every case the board stipulated that the rise should be "for the duration of the war only." Afterward new regulations will be in order.

Exportation of Second-Hand Articles Composed of Iron or Steel

The War Trade Board announces that on and after Nov. 1, 1918, all applicants for licenses to export second-hand articles composed of iron or steel will be required to state on Form X that the commodity to be exported is "second-hand." Failure on the part of the applicant to describe second-hand material as such will be regarded as an inaccurate description of the goods and the applicant will be subject to the prescribed penalty therefor.

Medina Company Will Have Adequate Supply of Gas for All Consumers

James Burtner, field superintendent of the Medina (Ohio) Oil & Gas Company, which supplies part of the gas to Mansfield consumers, stated at Wooster that the company will enter the winter season with an adequate supply of gas, and judging from past experience no cities served by the Medina company will experience any serious gas shortage.

"We have not drilled quite so many wells this year as last year," he explained, "but we have had fairly good luck and right now are able to supply a large volume of gas. If we have a winter like last winter we may run short, but with ordinary winter weather I think we will be able to supply the demand."

The Medina company has drilled some wells near Shreve and several good ones near Medina.

Oil Well Completed on Ferris Dome, Wyo.

The Producers' & Refiners' Corporation has just completed a well with high-grade oil in large quantity on the Ferris dome, 35 miles northeast of Rawlins, Wyo., and 15 miles east of the Lost Soldier field.

The entire structure is under lease to the Producers' & Refiners' Corporation, which has a drilling arrangement with West & Hazlett, the Wyoming representatives of the Prairie Oil & Gas Company.

Illuminating Companies Asked to Save Labor for War Program

The Empire Gas & Electric Company has sent the following letter, dated Oct. 23, with letters of the chairman of the Capital Issues Committee and the War Industries Board in circular form to all members of the association:

"In the conservation of labor and materials which is essential to the successful prosecution of the war, an important, although perhaps unwelcome, duty devolves on all gas and electric companies.

"Every extension of mains, and, in fact, every service connection, means the expenditure of labor and materials. Unless, therefore, such extensions or service connections serve some direct war purpose they are interfering with the production program of the country and with keeping our army and navy supplied with those things necessary for victory.

"Under the State law gas and electric companies cannot refuse to furnish service to applicants within 100 ft. of their mains. There are, however, two things they can and should do:

"First, they should discontinue soliciting business, except, of course, war business, where their service is not already in the premises. This step should be taken in order to release labor and material for war purposes and entirely independent of whether the company has surplus and unused capacity or not.

"Second, they should give the fullest possible publicity to the situation, explaining it to the municipal authorities and to all applicants for service. The public should be brought to look at the matter from a national standpoint. The slight saving in any individual case appears unimportant, but multiplied by the large number of similar cases throughout the country it assumes a very different aspect.

"We appreciate that where a company has service to sell the adoption of the above suggestions will mean relinquishing the possibility of securing some much needed revenue. We have, however, enough confidence in the whole-hearted patriotism of the men in the gas and electric business in this State to feel sure that they will cheerfully make this sacrifice and co-operate in this matter as they have in all other requests which have

been made to them in this national emergency.

"Copies of letter from the Capital Issues Committee to the War Industries Board in relation to this subject and of Mr. Baruch's reply, furnished to us by the National Utility Conditions, are given herewith for your information.

"Very truly yours,

"C. H. B. CHAPIN, *Secretary.*

"Oct. 23, 1918."

Letter received from C. S. Hamlin, chairman of the Capital Issues Committee by Hon. Bernard M. Baruch, chairman of the War Industries Board, dated Oct. 1, follows:

"DEAR SIR: On Aug. 23 the Capital Issues Committee sent out to the public utility commissions of the several States a letter requesting cooperation in the effort of the committee to conserve capital, and suggested that the public ultility companies be allowed to curtail capital expenditures for extensions whenever possible, and except in instances of urgent war necessity to defer them entirely until the war had ended.

"The public utility companies were in favor of this action, and the commissioners generally have been entirely agreeable to such curtailment and deferment, but in some instances there has been dissatisfaction on the part of the public and a tendency to insist on extensions of and service connections with water mains, electrical trunk lines and gas mains, and extensions of electric railway service.

"This committee recognizes the justice of the demand in every case where compelling war necessity is present, but if only ordinary convenience is involved, which in peace times might amount to a necessity but under war conditions would be classed as a luxury, the committee believes your board will be unwilling to permit the use of materials unless the need for war purposes can be clearly demonstrated.

"Will you kindly give us a general rule noting such exceptions as you feel should be made in order that we may be guided in giving opinions on applications for capital issues for extensions of public utilities:"

Letter from Bernard Baruch, War Industries Board, dated Washington, D. C., Oct. 3, to Hon Charles S. Hamlin, chairman Capital Issues Committee, follows:

"DEAR SIR: Referring to your letter of Oct. 1, in regard to public utility requirements, may I bring to your attention the desirability of holding down all expenditures to what is absolutely needed, not what is wanted. In view of the demands for materials for war purposes, the War Industries Board would not and cannot permit the use of materials unless the need for war purposes can be clearly demonstrated. In many instances the demand would be just and fair were we not confronted with this unusual demand for materials. This demand is insistent and persistent, and it will be so for some time to come. Only absolute necessity must be considered and not convenience.

"May I ask for your co-operation?"

Court Asked to Dismiss Pending Litigation in Chicago Rate Case on Sutter Decision

When the Illinois Supreme Court ruled that the State act of 1908, which was intended to give the city the right to fix gas rate charges, was unconstitutional, all pending litigation brought by the city against the company automatically was dismissed.

This was the argument made Oct. 22 by John S. Miller, attorney for the gas company, in the suit before Circuit Judge Torrison to have the company held for contempt for trying to collect the 27½ per cent increase in rates allowed by the State public utilities commission. On it he asked the court to dismiss the pending litigation. The court took the question under advisement, and said a ruling on Mr. Miller's contention would be made later.

Donald R. Richberg, special counsel for the city council in gas-rate matters, opposed Mr. Miller's point. Mr. Richberg said the gas company waived the legality of the 1905 act when proceedings were started to force the company to live up to the rates contained in the 1911 ordinance.

Mr. Miller said the contempt case and the suit to collect $10,000,000 in alleged overcharges under the 1911 ordinance were nullified by the Supreme Court decision.

After the hearing Mr. Richberg reiterated his charge that the Sutter case, on which the Supreme Court ruling was made, was not a fair one on which to base a ruling on the constitutionality of the 1905 act. He again blamed the city law department for being a party to this case.

Increased Rates for Helena, Ark., Announced

The Helena (Ark.) Gas & Electric Company announced that the rates for gas and electricity had been increased by sending circulars to all of its consumers.

The new schedule of rates for gas, effective with the meter readings the last of October, 1918, will be as follows:

First 5,000 cu. ft., $2 per 1,000; next 5,000 cu. ft., $1.75 per 1,000; next 5,000 cu. ft., $1.50 per 1,000; next 10,000 cu. ft., $1.25 per 1,000; next 25,000 cu. ft., $1.15 per 1,000; over 50,000 cu. ft., $1.05 per 1,000; Five per cent discount for prompt payment. Minimum bill, $1 per month.

The increases are not permanent, but are necessary to tide the company over the present temporary emergency, during which the operating expenses are substantially greater than the income. When the war is over and normal and natural economic reactions bring about a decrease in the cost of operating the plants, consumers can expect, and will receive, a corresponding reduction in the cost of gas and electricity.

Wapakoneta Rates Reduced 5 Cents Per 1,000 for Winter Months

Secretary Harry Loth, of the Wapakoneta (Ohio) Gas Company, has been notified that the gas company has cut the new rate for gas for the first 5,000 ft. 5 cents less than the legal tariff. It is believed that more than half of the customers of the company will pay but 45 cents per 1,000 ft., instead of 50 cents, as provided for in the ordinance establishing a new rate, for the reason that very probably half the consumers use less than 5,000 ft. per month.

The reduction is, however, for the winter rate only, and applies during the months from November to April, inclusive. The new rates for gas effective as of Oct. 1. Notice of the reduction was given by President E. R. Curtin.

The gas company filed with the public utilities commission at Columbus a schedule of rates which provides for a 45-cent tariff for the first 5,000 ft. used each month, while the ordinance passed by council a few weeks ago fixed the rate at 50 cents. Mr. Curtin, in announcing the reduction, stated that more than half of

the company's consumers use less than 5,000 ft. per month. Thus there will be a saving of 25 cents on the first 5,000 ft. used. This new rate applies in Lima, Wapakoneta, St. Marys and at other points supplied by the company.

The schedule of rates filed by the gas company provides a straight charge of 50 cents per month from May to October, inclusive. The winter rate of 45 cents for the first 5,000 cu. ft., 50 cents for the next 20,000 ft., 60 cents for the next 5,000 ft., 70 cents per 1,000 for all over 30,000 ft. No consumer is to be permitted to use more than 35,000 cu. ft. in any one month. And the above rate applies to domestic consumers only.

Gas Mantle Week, November 4 to 9—Extensive Campaign to Eliminate Open Flame Burner

The week of Nov. 4 to 9 has been officially set by Director Thomas L. Raymond, of the department of streets and public improvements, Newark, N. J., as "Gas Mantle Week." An urgent appeal to all householders who are now using open-flame gas burners to replace them with gas mantles will be made during the week in order to conserve gas, money and coal.

The Public Service Gas Company and all the merchants in Newark who sell gas lamps and gas mantles are co-operating with the department to make this campaign a success. All the merchants will carry a special window display for the week, and printed matter prepared by the department will be placed in these windows. The merchants will display their own goods in their own way, and have entered diligently in the plan to induce all users of open-flame gas gurners to replace them with mantle lamps.

Printed matter such as shown on the accompanying pages will be distributed. "Practical Ways to Save Gas," card 7 x 5½ in., will be distributed from house to house. A larger poster of the same matter and a "Help Your Government" poster will be placed in store windows during the week. The "Gas Mantle Week" poster will be placed upon store windows, in trolley cars and all other available places.

The above plans are being carried out by the bureau for the inspection of gas.

Using Waste Heat from Gas Engines

For a considerable time the waste heat from steam engines has been turned to good account, but there have been difficulties in using the exhaust gases from a gas engine, as they readily attack the metal of the conduits, says the *Popular Science Monthly*. However, the difficulty is being overcome, for a New Jersey candy factory has an installation in connection with a 60-hp. engine which is used to heat the factory. The gases pass through an economizer made of cast iron, with the passages to the different sections staggered so that all parts are heated for the whole length. Water circulates in jackets surrounding the gas passages.

Oil Division Will Function Through State Administration in its Conservation Work

Experts to Be Nominated by Oil Division, but Appointed by State Administrators

A disturbing conflict of authority in fuel adminstrative affairs in the Southwestern States was eliminated a few days ago when Evans Woollen, acting director of the Bureau of State Organizations of the Fuel Administration at Washington, issued the following announcement to State administrators:

"The oil division will function through the State administrators in its conservation work.

"The technical work will be in the hands of experts nominated by the Oil Division, but appointed by State administrators. This applies to gasoline, lubricating oil, fuel oil, kerosene and natural gas, and means that no instructions to consumers within a State shall be given except by the State administrator or his appointee. Production is, however, to rest wholly with Washington."

This statement was issued following a visit to Washington by State Fuel Administrators Wallace Crossley of Missouri, John G. O'Kelley of

Form 18 - 2580 10-18

NOVEMBER 4 to 9, 1918

GAS MANTLE WEEK

All householders are urged to replace open flame gas burners with gas mantles this week.

Save Gas Money Coal and Help Win the War.

THOMAS L. RAYMOND,

Director of Streets and Public Improvements.

Louisiana, Emerson Carey of Kansas, Wiley Blair of Texas, H. C. Couch of Arkansas, and P. A. Norris of Oklahoma. These administrators have formed a sort of "gentlemen's agreement" to confer with each other in all problems likely to affect more than a single State in the territory mentioned. The first informal conference held at St. Louis recently brought out the fact that serious difficulties were likely to arise from the fact that in each of these oil and gas producing States there were representatives of the Oil Division of the Fuel Administration who were acting independent of the State administrations.

It is claimed that these men were so engrossed in the conservation of oil that their activities sometimes had the effect of counteracting the efforts of the State administrations to conserve gas, coal and all fuels other than oil. This was pointed out by the Kansas administrator. The representative of the Oil Division decided that a certain industrial plant at Kansas City should not use oil as fuel, and so ordered the consumer to use gas instead. In this particular case, the Kansas administrator pointed out, that was the worst recommendation that could have been made. The need for the conservation of gas in the community concerned was equal to, if not greater than, that for the conservation of oil. The consumer should have been advised to use slack coal, the State administrator said.

Under the new arrangement the conservation of fuel, not of any particular type of fuel, will be basis of the activities of the Oil Division's representatives in the Southwestern oil and gas producing States. As is pointed out in Director Woollen's order, the Oil Division will function through the various State administrators in all conservation work, so that when an oil conservation problem presents itself the effect on the gas and coal supply as well will be considered in working out a solution of the problem.

HANG UP THIS CARD for FUTURE REFERENCE

DEPARTMENT OF STREETS AND PUBLIC IMPROVEMENTS
City Hall, Newark, N. J.

PRACTICAL WAYS TO SAVE GAS.

The shortage of coal and oil, the raw materials used in the manufacture of gas, makes it absolutely necessary for all users of gas to practice strict economy and care to prevent the tremendous waste now occurring and to conserve the present and future supply.

Do not use open flame gas burners. A mantle burner consumes only one-half to one-quarter as much gas as the open flame burner and gives two to three times the quantity of light. One mantle burner will take the place of two or three open flames, and a small size mantle burner will sufficiently light bedrooms, bathrooms, halls and cellars.

Turn out gas lights when not in use. Matches are cheaper than gas.

It is extremely wasteful to use a gas range for heating a room. Use a regular heater for this purpose and turn the gas down or entirely out when your room is sufficiently heated. Buy a good thermometer and keep your room from 68 to 70 degrees.

Whenever possible turn down the gas flame on gas range or hot plate top and oven burners. Bring the food to the boiling point on medium size burners then transfer vessel to the simmering burner, or turn down flame low enough to just keep food boiling. Hard boiling will not speed up the cooking or make the food any hotter but it does waste a large quantity of gas.

Never permit gas to burn around the outside of a cooking utensil because all this gas is entirely wasted. Fit the cooking utensil to the flame or turn the flame down to burn only under the utensil.

An entire meal can be cooked in the gas range ovens at the same time. Ask the gas company how to do it.

Do not permit gas leaks. They are dangerous and expensive.

Regularly read your gas meter index. If you do not know how to do this send to the Municipal Bureau for Inspection of Gas and Gas Meters for the pamphlet "The Gas Meter and How to Read Its Index."

THOMAS L. RAYMOND,
Director of Streets and Public Improvements.

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Fort Dodge Rates Increased

Owing to the decision of the State board of conciliation made public recently, the Fort Dodge (Iowa) Gas & Electric Company may raise their rates to $1.37½, an increase of 2½ cents over present rates. The company petitioned an increase of 15 cents from the city council. The matter was referred to the State board recently appointed to settle public utility matters in war time. This rate will hold good for six months.

Increase Sought for Manistee, Mich.

The Manistee (Mich.) Light Company has asked for permission to again increase the gas rate. Three months ago the city permitted a 25-cent boost. A rate of $1.75 is now sought.

Increased Rate Sought by Contra Costa Company

Application was made recently by the Contra Costa Gas Company to the California Railroad Commission for an increase in gas rates. The company serves artificial gas to consumers in Pittsburg, Antioch, Concord, Martinez, Crockett and adjacent territory in Contra Costa County. The company asserts that war conditions have so increased its operating expenses that higher rates are necessary, and it asks them in a form of a surcharge on the present rates, but does not fix the amount of surcharge to be granted.

The railroad commission in March granted an increased schedule of rates to the Contra Costa company because the commission found at that time that unless an increase was granted the revenue would not meet actual operating expenses. The new rates were expected to produce a revenue of $1.54 per 1,000 ft. for gas sold.

The rates fixed in March were $1.10 for the first 500 ft., $1.70 per 1,000 for the next 2,000 ft., $1.50 per 1,000 for the next 2,500 ft., graduating to 90 cents per 1,000 for 15,000 ft. or more, with a discount on all bills of 10 cents per 1,000 for prompt payment.

Fort Madison Asks Injunction to Restrain City From Interfering with Rates Charged

A suit directed against the city of Fort Madison, Iowa, was filed in the Federal Court at Keokuk recently by attorneys representing the Fort Madison Gas Company. The action is the outgrowth of the plea of the gas company, made early in the year, for an increase in rates, which was refused by the city council.

The petition filed by the company asks the Federal Court to issue an injunction against the city of Fort Madison from compelling the company to sell gas under the present franchise rate in force in that city.

The filing of the suit follows the hearing held by the State board of conciliation appointed by Judge Wade, and which recently met in Fort Madison to take up the claims of the company. The members of the city council of Fort Madison refused to appear at the hearing of the case and the State board granted the company a liberal increase in rates.

The present franchise in Fort Madison fixes the rate of ga sat $1.15 net. The State board found that $1.65 per 1,000 ft. would be a proper rate. The decision was the first made by the board in the State.

The petition states the company lost $1,164 during the first six months of 1918 in operation through increased cost of supplies.

School Children to Aid Gas Saving

Through the nation's school children the Government expects to save $36,000,000 worth of natural gas, enough to make 2,000,000 3-in. shells and send a 15,000-ton troop ship overseas every day for a month.

The Fuel Administration will teach the school children, who can teach their mothers, how the proper adjustment of gas cooking appliances, used by more than 2,000,000 consumers, will save a thousand feet a month for each home, effecting a possible total gas economy of 2,000,000,000 ft. of gas a month and releasing for war uses the fuel saved thereby.

The courses will be established first in Ohio and Kentucky schools.

Union Gas & Electric Pays Tax on Increased Earnings

The Union Gas & Electric Company, Cincinnati, Ohio, recently sent to City Auditor George Carrel a check for $3,000.62, representing franchise tax on its gross earnings for the three months ending Sept. 30, amounting to $652,124.30, an increase of nearly $50,000 over the corresponding period of 1917.

Natural Gas Men Meet at Pittsburgh Seeking Light on Gas Supply

T. B. Gregory, chief of the natural gas division of the Fuel Administration, was in Pittsburgh, Pa., recently and held a conference at the William Penn Hotel with a number of operators from the Ohio gas fields. D. O. Holbrook, secretary of the National Gas Association of America, together with gas men from Columbus, Dayton and Springfield, were there. The gas men sought some light on the probable gas supply the industries of the district may look forward to this winter, but Mr. Gregory admitted that it is a matter entirely dependent upon the weather.

Nov. 6 Set for Hearing of Rates to Be Charged by Citizens Lighting Company

City officials were notified that the public utilities commission has set for hearing on Wednesday, Nov. 6, the petition of the Citizens Lighting Company for an increase in the gas rates in La Salle, Ill. The session will be at the Chicago office.

The petition has been on file for several months, pending the setting of a date for the hearing.

Under the proposed new schedule, a flat increase of 60 cents per 1,000 cu. ft. would be charged consumers in La Salle.

At the present time the rates are as follows:

First 5,000 cu. ft. or less, $1.25 per 1,000.

Next 50,000 cu. ft., $1.15 per 1,000.

For all in excess of 55,000 cu. ft., 95 cents per 1,000.

The rates asked by the company are as follows:

First 5,000 cu. ft. or less, $1.85.

Next 50,000 cu. ft., $1.75.

All in excess of 55,000 cu. ft., $1.55 per 1,000.

Hanford Gas Rates Raised

Favorable action was taken by the railroad commission recently on the application of the Hanford (Cal.) Gas & Power Company for an increase in rates to meet higher operating costs, due mainly to advances in the price of oil and in cost of labor. The company said that it was not earning any interest on its investment, and was not paying actual operating expenses at the rates previously in effect. These rates were fixed when the company was buying fuel oil at 79 cents a barrel, while it now has to pay $1.66, and will be unable to get supplies for less than $2 a barrel after the end of this year.

Petition of Columbia Company for Rate Increase

At a meeting of the city council Oct. 22 a petition from the Columbia (S. C.) Railway, Gas & Electric Company asking permission to make an increase in the gas rates in the city of Columbia was presented. Council decided to consider the matter at a special meeting to be held later.

The petition of the company, which was read to the council, follows:

1. That it is unable to find any requirement of law or in the ordinance of the city of Columbia requiring such application to be made to city council, but despite this that it conceives that the application should be addressed to you.

2. That on account of the high price of labor, the high price of material and all other factors entering into the cost of gas, that your petitioner is now operating and has for a long time been operating the gas business in the city of Columbia at a loss, and that this condition cannot continue without an increase of gas rates, or a reduction of the quality of the gas.

3. Among such factors your petitioner would mention that the cost of coal has increased from $3.30 per ton to $6.10 per ton for run of mine coal, and that the cost of coke, which is essential in the manufacture of gas, has increased from $4.60 per ton to $11.75 per ton, and that the cost of oil has increased from 6 cents per gallon in 1914 to 11½ cents per gallon and that the cost of all other

lon, and that the cost of all other materials used in the manufacture of gas, the laying of mains, the upkeep of the plant, have increased likewise; that the cost of all accessories used in distribution of gas, such as gas meters, have greatly increased in price as well as all labor cost.

4. That for the month of August, 1918, your petitioner took in for gas sales the sum of $10,839.33. It expended:

Expenses of operation...	$9,425.75
Interest	1,250.00
Taxes	207.08
Depreciation	600.00
	$11,482.83
	10,839.33
Showing a net loss of..	$643.50

for the month of August, and your petitioner represents that it is entitled to a reasonable return upon the investment, and such reasonable return should be not less than 6 per cent.

Your petitioner expressly represents that it desires this increase only during the period through which the abnormally high prices for labor and material shall prevail. The increased rates which your petitioner requests authority to charge are as follows:

1 to 400 cu. ft. at $1.75 gross, $165 net.

Next 1,000 cu. ft. at $1.65 gross, $1.55 net.

Next 1,000 cu. ft. at $1.60 gross, $1.50 net.

Next 5,000 cu. ft. at $1.55 per gross, $1.45 net.

Next 5,000 cu. ft. at $1.50 per gross, $1.40 net.

Next 5,000 cu. ft. at $1.40 per gross, $1.30 net.

Next 10,000 cu. ft., $1.30 gross, $1.20 net.

Next 25,000 cu. ft., $1.20 gross, $1.10 net.

In excess of 50,000 at $1.10 gross, $1 net.

Minimum charge 60 cents per month per meter.

5. The rates being charged at the present time are as follows:

1 to 400 cu. ft. at $1.55 per 1,000.

500 to 1,500 cu. ft. at $1.45 per 1,000.

1,600 to 2,500 cu. ft. at $1.40 per 1,000.

2,600 to 7,500 cu. ft. at $1.35 per 1,000.

7,600 to 10,000 cu. ft. at $1.30 per 1,000.

10,100 to 15,000 cu. ft. at $1.20 per 1,000.

15,100 cu. ft. and over at $1.10 per 1,000.

25,100 cu. ft. and over at $1 per 1,000.

A discount at the rate of 10 cents per 1,000 cu. ft. will be allowed for payment on or before the tenth of the month.

Minimum charge 60 cents per month per meter.

Pacific Gas & Electric Company Reports Increase in Net Earnings for September

In the face of decrease in gross earnings for September as compared with August of this year, the Pacific Gas & Electric Company's preliminary income account report for last month records good gains for the month in net revenue from operations and in total net income, due to a decrease in September operating costs, as compared with August expenses, and a gain in profits on merchandize sales. Last month's operating costs, as shown in the appended table, were smaller than in August by $95,020, while revenues from operations and total net income show gains of $69,243 and $82,531, respectively. All items of income for September show gains over the same month a year ago, while deductions for bond interest requirements are shown to have been smaller.

Gross operating revenues for the twelve months* ended Sept. 30 showed the customary increase over last year, but total income for the period was smaller. Following is the preliminary income account report for September and for twelve months:

MONTH OF SEPTEMBER 30

	1918	1917	Increase
Gross operating revenue.....	$1,965,619.58	$1,696,828.54	$268,791.04
Expenses, including taxes, reserves for depreciation, etc....	1,349,820.69	1,110,506.02	239,314.67
Net earnings from operation	$615,798.89	$586,322.52	$29,476.37
Add profits on merchandise sales and other miscellaneous income	45,920.76	41,057.18	4,863.58
Total net income.....	$661,719.65	$627,379.70	$34,339.95
Deductions—			
Bond and other interest.....	$342,083.51	$345,812.92	*$3,729.91
Apportionment bond discount and expense	15,426.41	15,426.41	.....
Accrued dividends on preferred stocks	124,473.02	123,937.31	535.71
Total deductions	$481,982.94	$485,176.64	*$3,193.70
Balance	$179,736.71	$142,203.06	$37,533.65

TWELVE MONTHS ENDED SEPTEMBER 30

	1918	1917	Increase
Gross operating revenue.....	$21,638,310.92	$19,501,093.90	$2,137,217.02
Expenses, including taxes, reserves for depreciation, etc....	14,620,478.75	12,063,346.97	2,557,131.78
Net earnings from operation	$7,017,832.17	$7,437,746.93	*$419,914.76
Add profits on merchandise sales and other miscellaneous income	481,717.79	574,292.55	*92,574.76
Total net income.....	$7,499,549.96	$8,012,039.48	*$512,489.52
Deductions—			
Bond and other interest.....	$4,125,747.20	$4,001,847.34	$123,899.86
Apportionment bond discount and expense	185,116.92	182,072.81	3,044.11
Accrued dividends on preferred stocks	1,490,224.39	1,451,153.19	39,071.20
Total deductions	$5,801,088.51	$5,635,073.34	$166,015.17
Balance	$1,698,461.45	$2,376,966.14	*$678,504.69

*Decrease.

Standard Retires Additional Bonds

The Philadelphia Trust Company, 415 Chestnut Street, Philadelphia, Pa., has invited tenders of Standard Gas & Electric Company 6 per cent bonds, due 1916, at 3 p. m., Friday, Oct. 25, to absorb $21,420 cash now held by them for the redemption of bonds.

Lawrence (Mass.) Gas Rate Increased

The Massachusetts Gas and Electric Light Commission has revised its former order allowing the Lawrence Gas Company to charge 95 cents per 1,000 cu. ft., increasing the rate to $1.15, effective Nov. 1. This higher rate is granted by the commission for the duration of the war only unless otherwise changed by the commission after public hearing.

Personal Notes

RALPH J. PATTERSON, manager of the Twin State Gas & Electric Company, has been appointed district fuel conservation engineer for the district including Berlin, Littleton, Groveton, Lancaster, Lincoln and Whitefield, N. H. He will be assisted in the work by such aides as he may appoint. The object of this commission is to inspect boilers and plants with a view to making a practical saving in fuel. Inefficient apparatus will be noted and advice and instruction will be given to enable proprietors to get the best results from the fuel consumed.

FRANK A. STEELE, of Dayton, Ohio, has begun his duties as associate general manager of the Utica (N. Y.) Gas & Electric Company, to succeed W. A. Buttrick, who has entered the United States Motor Transport Service. Mr. Steele is an electrical engineer, graduate of Virginia Military Institute and George Washington University. He has had considerable experience with the Westinghouse Electric & Manufacturing Company. For several years he was also connected with extensive coal mining propositions in West Virginia and the last six years has been associated with the Dayton Power & Light Company.

MILAN R. BUMP, chief engineer and FRANK J. PETURA, purchasing agent, of the Doherty Companies, have returned to New York after an extended visit to the El Dorado and Augusta fields. They were entertained with a dinner at Oak Hill Country Club, Bartlesville, Oct. 21.

C. L. PROCTOR, vice-president and general manager of the Danbury (Conn.) & Bethel Gas & Electric Light Company, was in Boston, Mass., recently as representative of the publicity committee of the Danbury War Bureau, attending a conference of committees from all parts of New England to make plans for the coming United War Service campaign.

BARNEY OLSON, an employee of the Peoples Gas Light & Coke Company, Chicago, Ill., was recently formally presented with the Samuel Insull trophy, emblematic of the golf championship of gas company employees. The tournament played through the summer under the auspices of the Advance Club of company employees and terminated Oct. 22 with Olson's victory. Thirty employees participated in the play.

WILLIAM J. BRAY, superintendent of the Spring Garden gas plant of the Consolidated Gas, Electric Light & Power Company, Baltimore, Md., and one of the most prominent of the younger gas engineers of the country, died Oct. 15 of pneumonia, resulting from influenza. He was ill one week. Mr. Bray was thirty-six years of age on Oct. 4. He was born in New Jersey, but when a child his parents moved to Nevada, where he lived until ready to enter college. He became a student at Stevens Institute of Technology at sixteen and graduated at the age of twenty with the degree of mechanical engineer. He came to Baltimore soon afterward and became associated with the Consolidated company, rising in its employ to the office he held at his death.

JOSEPH CROMWELL JONES, of Utica, N. Y., died Oct. 14 of pneumonia after one week's illness. Mr. Jones represented the Utica Gas & Electric Company throughout the entire Mohawk Valley as inspector. He was twenty-eight years of age, and had been in the employ of the company for the last eleven years.

Construction Notes

Improvements Being Made at North Attleboro

Retort Bench Completed — Order Is Placed for Gas Exhauster and Motor

James Gardner has just completed setting a bench of six retorts half depth with silica material at the plant of the North Attleboro (Mass.) Gas Light Company. It will be necessary to have two more benches filled this winter.

The company has also placed an order with the B. F. Sturtevant Company for a gas exhauster and motor to increase the pressure.

New Water Gas Apparatus Installed at Webster Plant

Contract Placed for Two Concrete Purifiers—Excellent Service Insured

The Webster & Southbridge Gas & Electric Company, of Webster, Mass., recently had the Gas Machinery Company, of Cleveland, Ohio, install a new 7-ft. water gas apparatus in the gas plant at Webster, and all the gas for Webster and Southbridge is now being generated in the Webster plant.

To provide for additional purification of the increased sendout from the Webster plant, a contract has been placed with the Gas Machinery Company for two 15 ft. 6 in. by 15 ft. 6 in. by 8 ft. deep, duplex concrete purifiers complete with two layers of trays in each box, self-sealing covers, apparatus for raising and transporting covers, and 12-in. valves and connections. The old purifiers will be used in series with the two new purifiers, and this will insure the continuance of the excellent service that the Webster & Southbridge Gas & Electric Company have been giving to their customers.

Machinery for Bath Plant Arrives

A car loaded with a big boiler from Minneapolis has arrived at Bath, Me., for the new gas plant.

In addition to this new boiler the plant has received all its machinery and apparatus, the latest arrivals being two carloads, both delayed over a month. The generator, condenser, scrubbers, in fact, the whole outfit,

is now in readiness to install. The water gas set includes tanks and compressor and the foundations for them all have been built. The new gas house has been completed within and without.

The result of the delay in arrival of the machinery will delay the company transferring the gas supply from the old to the new system about a month longer. It had been planned to make the shift Nov. 1. It is now calculated that this will be made Dec. 1, when Bath will have one of the best gas outfits in that section of New England, and one that will be in a manner duplex. The plant will be able to provide more gas than three cities the size of Bath would use and the volume of gas will be greatly increased.

Increased Consumption Necessitates Additional Apparatus at New London Plant

The rapid growth of New London, Conn., and vicinity, due primarily to naval activities, necessitated additional generating and purification apparatus in the gas plant, and the Connecticut Power Company has awarded the contract to the Gas Machinery Company, of Cleveland, Ohio, for a 7 ft. 6 in. water gas apparatus, condenser and P. & A. tar extractor.

The water gas apparatus is to stand alongside of the 6-ft. set installed by the same contractor in 1913.

Increase Allowed Williamstown Company

The Williamstown (Mass.) Gas Company employees have been busy for the past two weeks regulating the gas meters for the new gas rates granted to the company by the public service commission. The new rate is $1.25 per 1,000 cu. ft. of gas. The company is a branch of the North Adams Gas Light Company, where the gas is produced.

Sheboygan Rate Increase Petition to Be Heard Nov. 7

The Railroad Commission of Wisconsin has fixed Nov. 7 as the date of hearing on the petition of the Sheboygan Gas Light Company for an increase in rates.

The bill of particulars cites the various emergency increases granted the company by the railroad commission, and goes on to say that expenses on labor and materials necessitate a further increase to cover losses and other things and to provide for future operation. City Attorney D. T. Phalen will represent the city.

The bill of particulars shows two exhibits, first the present rates charged, and secondly, the rates asked of the railroad commission. The present rates per 1,000 cu. ft. of gas are as follows:

For the first 1,000 cu. ft. per month, gross $1.60, net $1.30; for the next 4,000 cu. ft., gross $1.25, net $1.15; over 5,000 cu. ft., gross $1.05, net $1. Gas used by prepayment meters to be paid for at the net rate effective for the first 1,000 cu. ft. used per month.

The graduate minimum charge per month is quoted as follows: Three lights, 25 cents; five lights, 25 cents; ten lights, 35 cents; twenty lights, 50 cents; forty-five lights, 60 cents; sixty lights, $1; eighty lights, $1.50; 100 lights, $2; 200 lights, $4.

The rates asked for are as follows: First 5,000 cu. ft. of gas used per month, $1.45 gross, $1.35 net; next 15,000 ft. of gas used per month, $1.30 gross, $1.20 net; all over 20,000 cu. ft. of gas used per month, $1.10 gross, $1 net. Minimum charge per month to each consumer shall be 75 cents net.

Gas used by prepayment meters to be paid for at the net rate effective for the first 5,000 cu. ft. used per month.

The Columbia Gas & Electric Company has declared the regular quarterly dividend of 1 per cent, payable Nov. 15 to holders of record Oct. 30.

The East Boston Gas Company has filed with the commissioner of corporations the following statement, dated June 30, 1918:

ASSETS

	1918	1917
Real estate, machinery and equipment	$1,195,279	$1,184,368
Supplies	121,730	110,556
Cash and debts receivable	16,738	4,441
Moneys received	60,651	56,161
Total	$1,394,398	$1,355,526

LIABILITIES

Capital stock	$575,000	$575,000
Other debts	465,618	433,301
Guaranty fund	60,651	56,161
Stock premium	11,000	11,000
Profit and loss	267,309	265,402
Reserve for accidents	9,577	14,201
Reserve for depreciation of autos	1,243	461
Reserve for employees' profit sharing	4,000	.....
Total	$1,394,398	$1,355,526

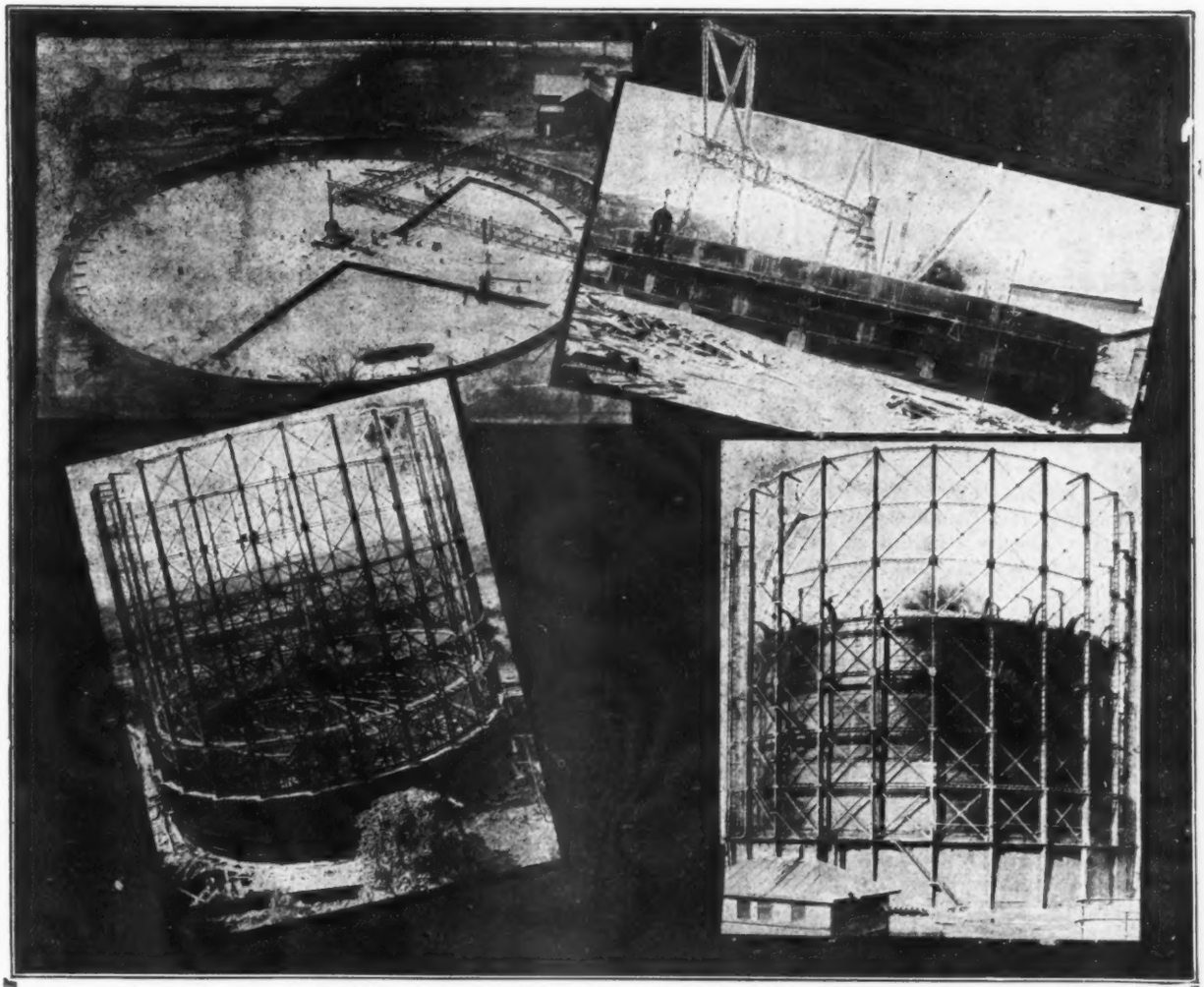
The Newport News (Va.) & Hampton Railway, Gas & Electric Company stockholders have received the earning statement for August and eight months of the current year. Gross earnings for August totaled $216,061, an increase of $85,775, while operating expenses amounted to $146,128, or $77,642 more than for the same month of 1917. After all deductions net income was $38,314, a gain of $2,741. Total gross revenues for the eight months were $1,365,000, a gain of $566,000. Operating expenses were $461,936 larger, while net income after all deductions totaled $225,322, an increase of $72,291.

The Beata Oil & Gas Company, of Kansas City, Mo., has increased its capital from $50,000 to $300,000.

The Black Hawk Oil & Gas Company, Wilmington, Del., to acquire lands containing oil and gas and develop same. Capital $50,000.

The Rosedale Oil & Gas Company, Terre Haute, Ind., capital $50,000, to own and operate oil and gas lands. Directors, Ezra R. Baldridge, Oliver P. Bell, Daniel V. Miller, Jerome F. Shandy.

The Cities Service Company recently declared the regular monthly dividend on preferred stock of one-half of 1 per cent in cash, at the rate of 6 per cent per annum, and on the common stock the regular dividend of one-half of 1 per cent in cash, or 6 per cent per annum, and three-fourths of 1 per cent in common stock, at the rate of 9 per cent per annum. These dividends are payable Dec. 1 to stockholders of record of Nov. 15.

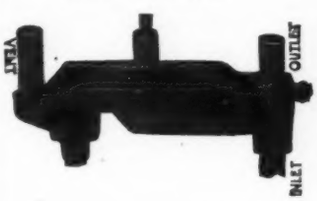


RITER-CONLEY COMPANY

STEEL CONSTRUCTION

PITTSBURGH

HIGH PRESSURE



COMBINATION STYLE
(With Mercury Seal)

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C. B. BABCOCK CO.
No. 768 Mission Street
San Francisco

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ARTIFICIAL GAS GOVERNORS
AND
NATURAL GAS REGULATORS
For All Kinds of Pressure Reduction

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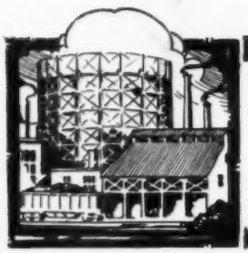
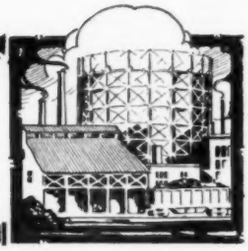


With The Equipment & Appliance Manufacturers



Conducted by Business Department of American Gas Engineering Journal

Modern Methods of Combustion

The modern engineer, in whichever of the many branches of the profession he may be engaged, is being constantly faced with the problem of economically attaining in his furnaces and ovens a more or less high temperature, and in many cases of maintaining that temperature within almost infinitesimally small limits of variation for considerable periods of time.

At no time, however, has the problem become so serious and important as the period which we are now in. The very serious shortage of fuel, together with the utilization of diluted labor, compels the engineer of to-day to find improved methods of combustion and methods whereby unskilled labor can be utilized, at the same time speeding his output. There are many methods of using fuel of both solid and liquid form, but it is becoming more and more realized that gas is the most handy, cleanly and economical agent for generating heat, and in its regulation it is not readily equaled.

There are, however, many improvements which have been effected during the past few years in the methods of effecting this combustion. Practically every problem of heat treatment to-day is solved by gas methods on a commercial scale. The problems which in the past few years were thought to be impossible for gas have been, by necessity of war, solved successfully and commercially for gas-burning equipment.

The present shortage of fuel oil again draws to the attention of serious engineers the necessity of further utilization of fuel whereby higher efficiency can be obtained.

Many of the most improved applications during this period have been by the aid of high-pressure gas.

The advantages of high-pressure gas over various other systems and methods are manifold. As the volume of air admitted is scientifically maintained by the velocity of the gas, a more perfect combustion is obtained than is possible, except by the most skilled operator taking a constant analysis of his flue gases and continuously adjusting his gas and air lines to meet the highest point of efficiency. This, in general factory conditions, is impracticable.

With high-pressure gas it is quite common practice to work gas-fired furnaces where the waste gases contain as little as 0.5 per cent free oxygen, whereas with a furnace using liquid and solid fuels it is considered good work if the waste gases do not contain more than 8.5 per cent free oxygen. When one considers that this means an excess of 70 per cent of air, all of which entered the furnace cold and leaves it at high temperature, it will be seen what a large portion of the heat generated by the solid fuel is wasted in heating this excess air.

The accompanying illustration is a cut of the Needham High-Pressure Gas Apparatus. This system is independent of any variation of the gas pressure, being a one-pipe system and does not require a separate pipe for air. The pressure delivered at the burners is absolutely constant, and the correct ratio of air and gas is scientifically controlled by one valve to each furnace.

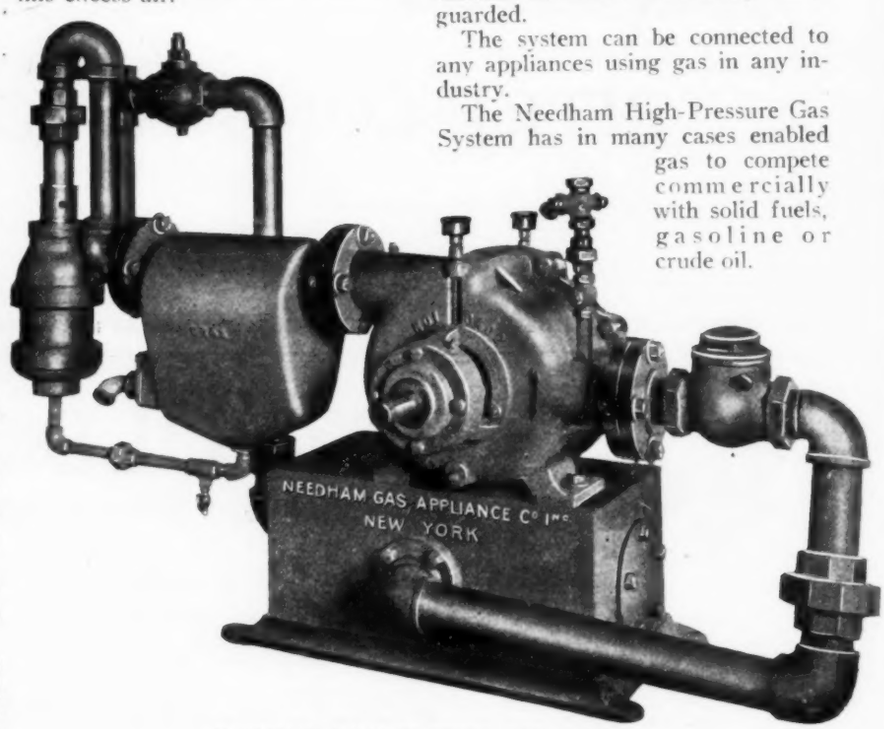
This system being gas compressed only, it is absolutely non-explosive, requires less size of pipe line in installation, and eliminates entirely adjustments necessary with air-blast system.

It is designed for hard factory usage, combines advantages of the successful European systems, and specially designed improvements to meet American requirements.

It is sold under definite guarantees as to economy, and thereby all intended customers are fully safeguarded.

The system can be connected to any appliances using gas in any industry.

The Needham High-Pressure Gas System has in many cases enabled gas to compete commercially with solid fuels, gasoline or crude oil.



NEEDHAM HIGH-PRESSURE GAS SYSTEM